

AMPERSAND2

ESTHER2

FULMCRYAN WALLFACE2

2016 NORTHEAST REGIONAL COOPERATIVE  
SOIL SURVEY WORKSHOP  
LAKE PLACID, NY

S16NY03101 S16NY03102



The objective of the tour is to 3 fold: first to show a topo-sequence of Spodosol development in loamy Adirondack tills which will illustrate the thickening of spodic horizons, increased organic matter accumulation in mineral horizons and the surface, and increased concentrations of iron, aluminum, and amorphous materials, all with increasing elevation. Second, we would like to show evidence for Andic soil properties in these tills at higher elevations. Finally, we will present evidence that the soils in the Adirondacks possess properties that are different enough from same and similar soil series mapped in the rest of MLRA 143, that a separate LRU or subset of MLRA 143 should be established.

### **LANDSCAPE**

The Adirondack Upland has been mapped with two different soil temperature regimes, frigid and cryic, and several soil catenas have been mapped in these areas. We have gone with a hard line elevation break of 923 meters (3000 feet) for the frigid/cryic boundary, based on work by Dr John Witty on Whiteface Mtn 1968, and later supported by our own soil temperature data collection project on Whiteface. The frigid areas have been further subdivided into what I will refer to as the base elevation spodic (BES) areas in the lowest elevations, and the sub-cryic areas which are intermediate in elevation between the BES and the cryic areas. The elevation break is static at 923 meters for the high end of the sub-cryic areas, but ranges from about 523 meters (1700 feet) to 615 meters (2000 feet) for the break between the sub-cryic and BES areas. Soil series mapped in the cryic areas are Esther, Wallface, Santanoni, Skylight, and Couchsachraga and are predominantly Humicryods, are mapped exclusively in the Adirondacks. Soil series mapped in the sub-cryic areas include Mundalite, Ampersand, Wilmington, Rawsonville, and Hogback, and are predominantly Haplorthods and Haplohumods. In the late 1980s, the latter 3 series were established in New England as "super-spodics" because of thicker spodic development than the BES series. Soil series mapped in the "BES" areas are predominantly Becket, Skerry, Adirondack, Sabattis, Tahawus, Tunbridge, Lyman, Mondadnock, and Sunapee, and are predominantly Haplorthods. All but Adirondack, Sabattis, and Tahawus are mapped throughout New England.

### **ANDIC SOIL PROPERTIES**

During the late 1980's, as result of limited work in the cryic areas, lithic pedons especially appeared to be sandy particle size and did not fit the current suite of provisional coarse-loamy series correlated into the legend from VT, NH, and ME. During subsequent mapping details to accelerate production of the Order 3 areas, participants were requested to sample cryic soils to test our theories of sandy versus loamy particle size family texture placement. At this time, we also discovered that the cryic areas have soils with comparatively very thick O horizons. Limited transect data collected during the details and later on, prior to a special sampling detail to study OC in the northeast, illustrates the thick O horizons encountered in the higher elevations of the county. By the end of 1995 all of our lab data comes back and many of the pedons have horizons with Andic soil properties. Of the 15 mineral soils sampled in '93 and '94, and 1 sampled in '87, **5** key out as Andisols, **3** key out as Andic subgroup or would be Andic sub if not lithic, **3** more are 7 cm or less shy of the 25 cm thickness needed to make Andic subgroup, **1** is missing lab data and I am sure would be andic subgroup, and the rest just key out as Humicryods (**See attachment 1**). It should be noted that if the Andisol pedons had **albic horizons**, they would key out as spodosols first. The chemical criteria for Spodosols and part of the criteria for Andisols, oxalate extractable Fe and Al, is very similar. If the amount is high enough to make Andisols, then it easily makes Spodosols provided there is evidence of illuviation. Below are some discussions on Andisols and Spodosols.

***Taken from the "Andisol Proposal" by Guy Smith, 1978:***

The central concept of Andisols is that of a soil developing in volcanic ash, pumice, cinders, and other volcanic ejecta and in volcanoclastic materials with an exchange complex that is dominated by x-ray amorphous compounds of Al, Si, and humus, or a matrix dominated by glass, and having one or more diagnostic horizons other than an ochric epipedon. Bulk densities are always comparatively low in most horizons, though the absolute values vary with the degree of weathering, the humidity of the soil climate, and in a very few with the degree of cementation by silica or other cements. The most common diagnostic horizons are an umbric, or rarely a mollic epipedon, and a cambic horizon, or an ochric epipedon and a cambic horizon. In the driest climates, there may also be a duripan, and in the wettest climates a placic horizon is not uncommon.

*Taken from ICOMAND Circular Letter No. 9, May 1987*

The central concept of an Andisol is that of a soil developing in volcanic ejecta (such as volcanic ash, pumice, cinders, basalt), and/or in volcanoclastic materials whose colloidal fraction is dominated by short-range-order minerals or Al-humus complexes. Under some environmental conditions; weathering of primary aluminosilicates in parent materials of non-volcanic origin may also lead to the formation of short-range-order minerals; such soils are also included in the concept of Andisols.

The dominant process in most Andisols is one of weathering and mineral transformation. Translocation within the soil and accumulation of the translocated compounds are normally minimal. Nevertheless, accumulation of organic matter, complexed with aluminium, is characteristic of Andisols in some regimes.

*Information compiled by Rich Shaw from a literature review on the differences between andisols and spodosols.*

## **Andisols and Spodosols**

According to Soil Taxonomy:

**Andic soil properties** “result mainly from the presence of significant amount of allophane, imogolite, ferrihydrite, or aluminum-humus complexes in soil.”

“The concept of Andisols includes weakly weathered soils with much volcanic glass, as well as more strongly weathered soils rich in short-range-order minerals.”

Wada (1989) defines **allophane** as a hydrous aluminosilicate with a Si/Al ratio of 1:2 to 1:1, characterized by hollow, irregularly spherical particles, which give an amorphous XRD pattern; and **imogolite** as a paracrystalline (intermediate range order) mineral with an ideal composition of  $\text{SiO}_2\text{-Al}_2\text{O}_3\text{-2.5H}_2\text{O}(+)$ , and a tubular morphology. The XRD pattern of imogolite consists of a number of broad reflections.

Nearly all types of volcanic ash produce allophane by weathering, and imogolite can form by desilication of allophane or by precipitation from weathering solutions. Al-humus complexation inhibits the formation of allophane and imogolite.

The presence of allophane and imogolite is generally associated with areas of recent volcanic activity, but these materials have also been identified in soils formed from basalt, and in some spodosols (Wada, 1989).

**“Spodic materials** form in an illuvial horizon.”

“Soils with spodic materials show evidence that organic materials and aluminum, with or without iron, have been moved from an eluvial horizon to an illuvial horizon.”

“Spodic materials are dominated by active amorphous materials that are illuvial and are composed of organic matter and aluminum, with or without iron.”

Spodosols are generally associated with cool, humid climates, coniferous forest and ericaceous shrubs, on coarse textured, base-poor parent material.

In situ weathering or mineral transformation is the dominant process in Andisols' vs translocation and accumulation of Al, Fe, and organic matter in Spodosols (Shoji et al, 1988).

Both processes result in similar end products: highly active, poorly crystalline or amorphous aluminosilicates. Johnson and McBride (1989) found significant quantities of para- and non-crystalline aluminosilicates in the B and C horizons of four Adirondack spodosols (the Adams, Berkshire, Croghan, and Potsdam series). As a recent review (Ludstrom et al, 2000) indicates, some researchers favor a new theory to explain spodosol formation: silicate weathering followed by downward transport of positively charged inorganic hydroxyl-Al-Si complexes, instead of the traditional hypothesis, the formation and downward transport of complexes of organic acids Al and Fe. In examining spodosols from northern and southern Quebec, Wang et al (1986) found imogolite only in the northern pedons, and proposed that the colder temperatures and coniferous vegetation favored the transport of Al and Fe as silicate complexes rather than organic.

In the identification of andic soil properties, volcanic glass is no longer a requirement, if soil materials have less than 25% organic carbon and all of the following:

- 1) An Al plus  $\frac{1}{2}$  Fe percentage by ammonium oxalate totaling 2 percent or more;
- 2) Bulk density of 0.90 g/cm<sup>3</sup> or less (soils with considerable amounts of amorphous materials have low bulk densities);
- 3) P retention of 85% or more (specific adsorption of anions such as F and P occurs extensively on allophane & imogolite).

Sodium pyrophosphate reagent was formerly used in the identification of spodic materials. This dissolves mainly Al/Fe humus complexes, and does not extract most of the amorphous inorganic Al and Fe, including allophane and imogolite.

Ammonium oxalate does extract amorphous inorganic Al and Fe, allophane and imogolite, as well as Al//Fe humus complexes.

Wang et al (1986) proposed the latter as a better extractant to cover Al & Fe illuviated as both organic and inorganic complexes in spodosols.

Not all soils formed under volcanic ash are andisols. A paper by Shoji et al (1988) examined properties of andisols and spodosols formed from a similar type of volcanic ash in Japan. The spodosols were found at higher elevations/cooler climates under forest, the andisols under both forest and grassland. In general, the andisols were less acidic, had a greater amount of non-crystalline materials and a higher P retention, and a humus content which gradually decreased with depth. The spodosols met the andic requirements at that time. Soil morphological properties (e.g., an albic horizon) were cited as important in the separation of andisols and spodosols. Currently spodosols key out before andisols, and it appears it would be easier for spodic materials to meet the requirements for andic materials than vice-versa.

### ***NORTHEASTERN MOUNTAINS MLRA 143***

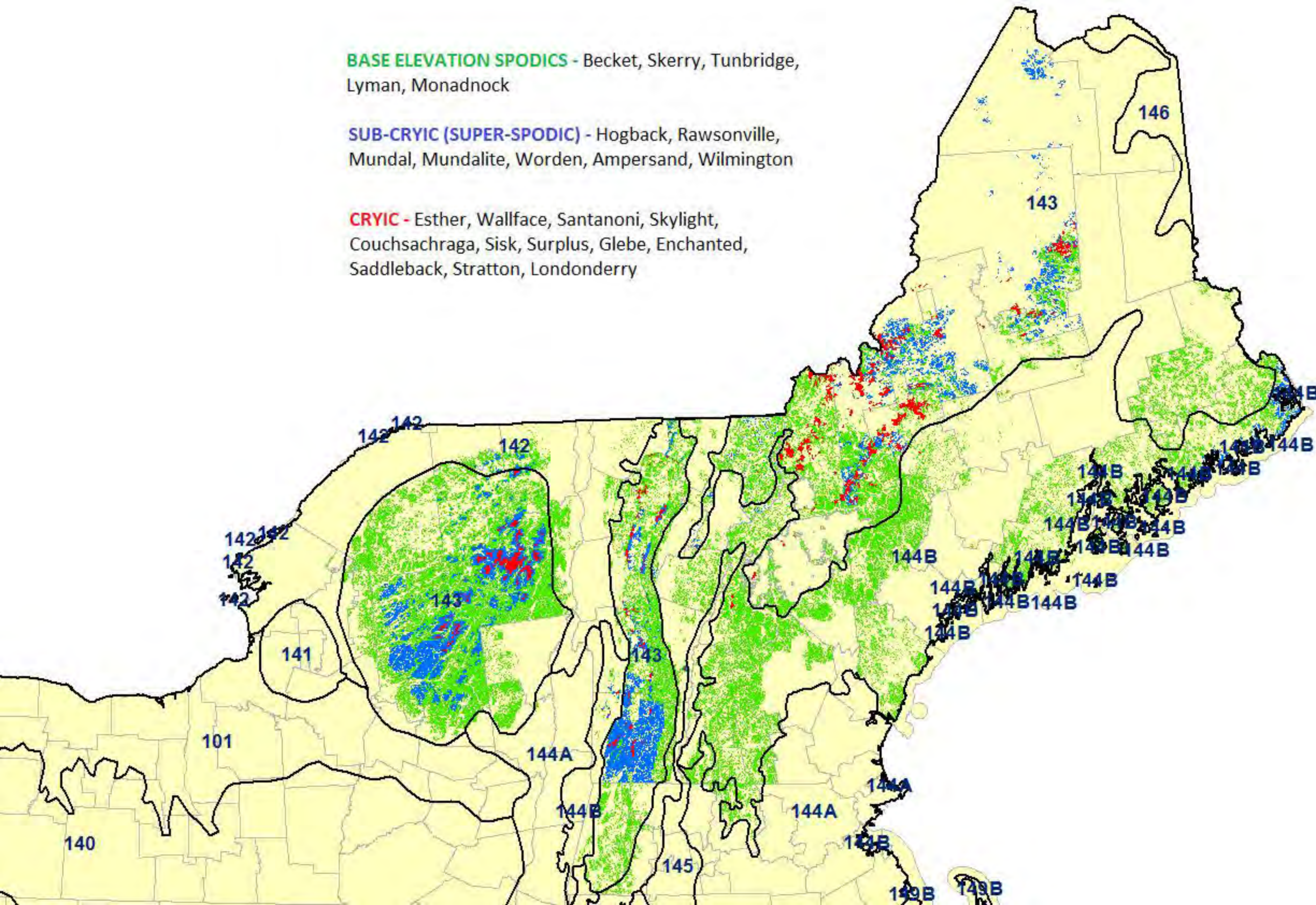
We believe there are differences in soil properties that support separating MLRA 143 into 3 LRUs, one each for the Adirondacks of New York, the frigid highlands of Vermont, and the New Hampshire and Maine frigid glaciated areas. The soils of each of these areas have different geologic parent materials from which the soils are formed. The Adirondack geology is made up of metamorphosed igneous intrusive rock of pre-Cambrian age, mainly meta-anorthosite, and other meta-igneous rocks. The Vermont geology that underlies the frigid spodosol tills is generally younger meta-sedimentary phyllites and mica-schists of Cambrian age, and other rock. The New Hampshire and Maine geology is generally even younger igneous intrusive granites of Ordovician or Devonian age. Characterization data shows that textures of the loamy tills mapped in the Vermont highlands are generally less sandy than those of the Adirondacks, and that the loamy tills mapped in New Hampshire and Maine are intermediate in sand content between the two. Average organic carbon contents of spodic horizons in the Adirondacks are significantly higher than in the rest of MLRA 143. Oxalate extractable aluminum also seems to be significantly higher than in the rest of MLRA 143. The following table shows summaries of selected characterization data from high elevation soils across MLRA 143.



**BASE ELEVATION SPODICS** - Becket, Skerry, Tunbridge,  
Lyman, Monadnock

**SUB-CRYIC (SUPER-SPODIC)** - Hogback, Rawsonville,  
Mundal, Mundalite, Worden, Ampersand, Wilmington

**CRYIC** - Esther, Wallface, Santanoni, Skylight,  
Couchsachraga, Sisk, Surplus, Glebe, Enchanted,  
Saddleback, Stratton, Londonderry



**SUMMARIES OF SELECTED CHARACTERIZATION DATA FROM Bh/Bhs HORIZONS OF CYRIC SOIL SERIES MAPPED ACROSS MLRA 143**

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[illegible]



SUMMARIES OF SELECTED CHARACTERIZATION DATA FROM Bh/Bhs HORIZONS OF BASE ELEVATION SPODIC SOIL SERIES MAPPED ACROSS MLRA 143

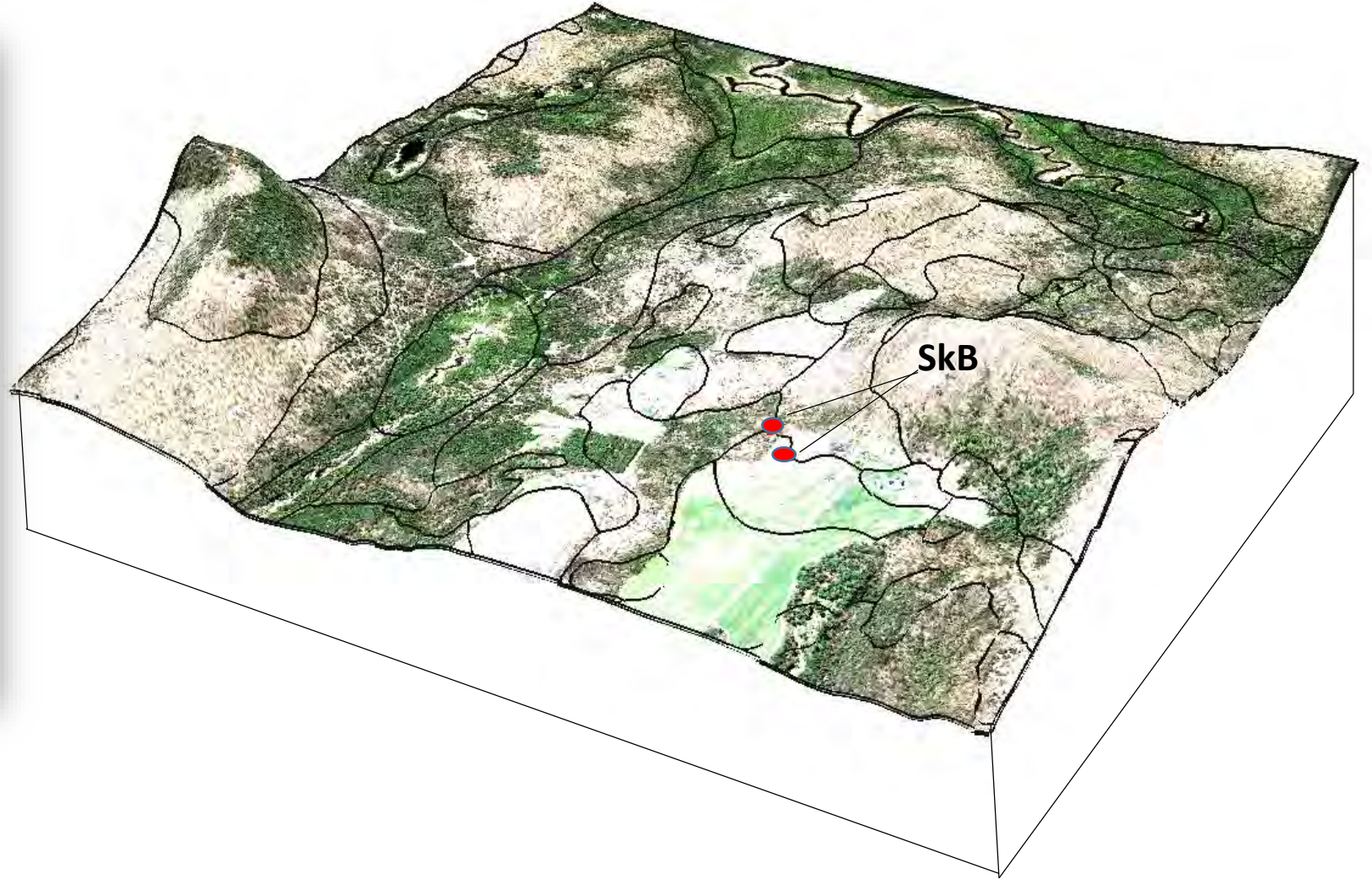
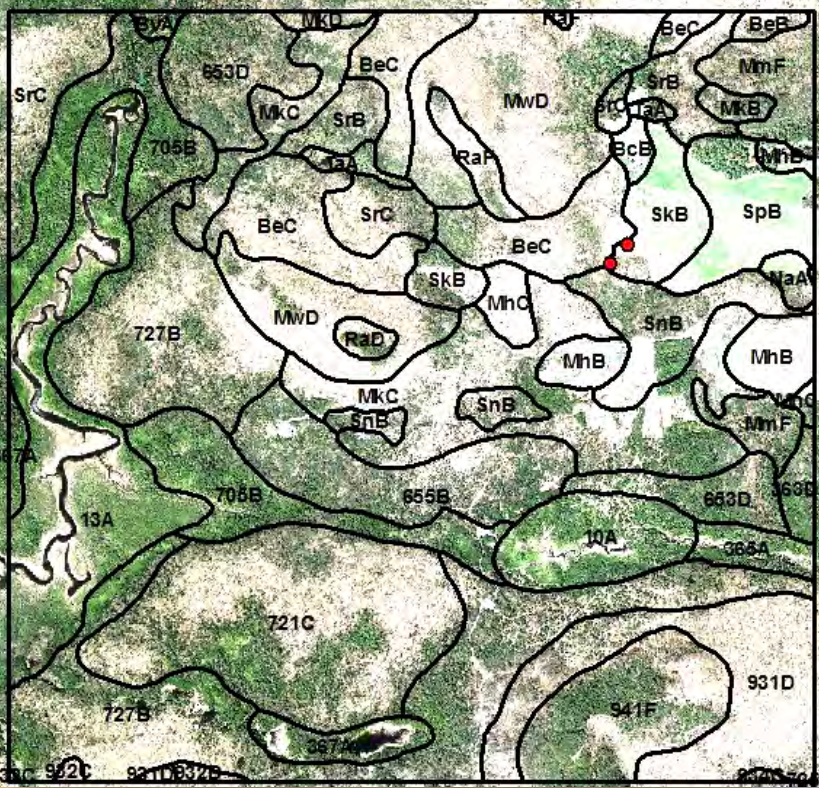
SOLUM TEXTURES % (count)			Db1/3				OC				FEOX				ALOX				pH				NZ-P			
ALL HORIZONS ABOVE C/d			L	RV	H	(count)	L	RV	H	(count)	L	RV	H	(count)	L	RV	H	(count)	L	RV	H	(count)	L	RV	H	(count)
NY	COS - 2%	(247 TOTAL)	0.53	0.96	1.78	24	1.6	6.35	20.42	86	0.09	1.71	4.19	65	0.13	1.46	6.18	65	3.5	4.2	4.9	48	8	65	99	22
	COSL - 2%																									
	FS - 1%																									
	FSL - 26%																									
	L - 2%																									
	LCoS - 7%																									
	LFS - 2%																									
	LS - 27%																									
	S - 1%																									
	SiL - 4%																									
	SL - 26%																									

VT

NH

ME

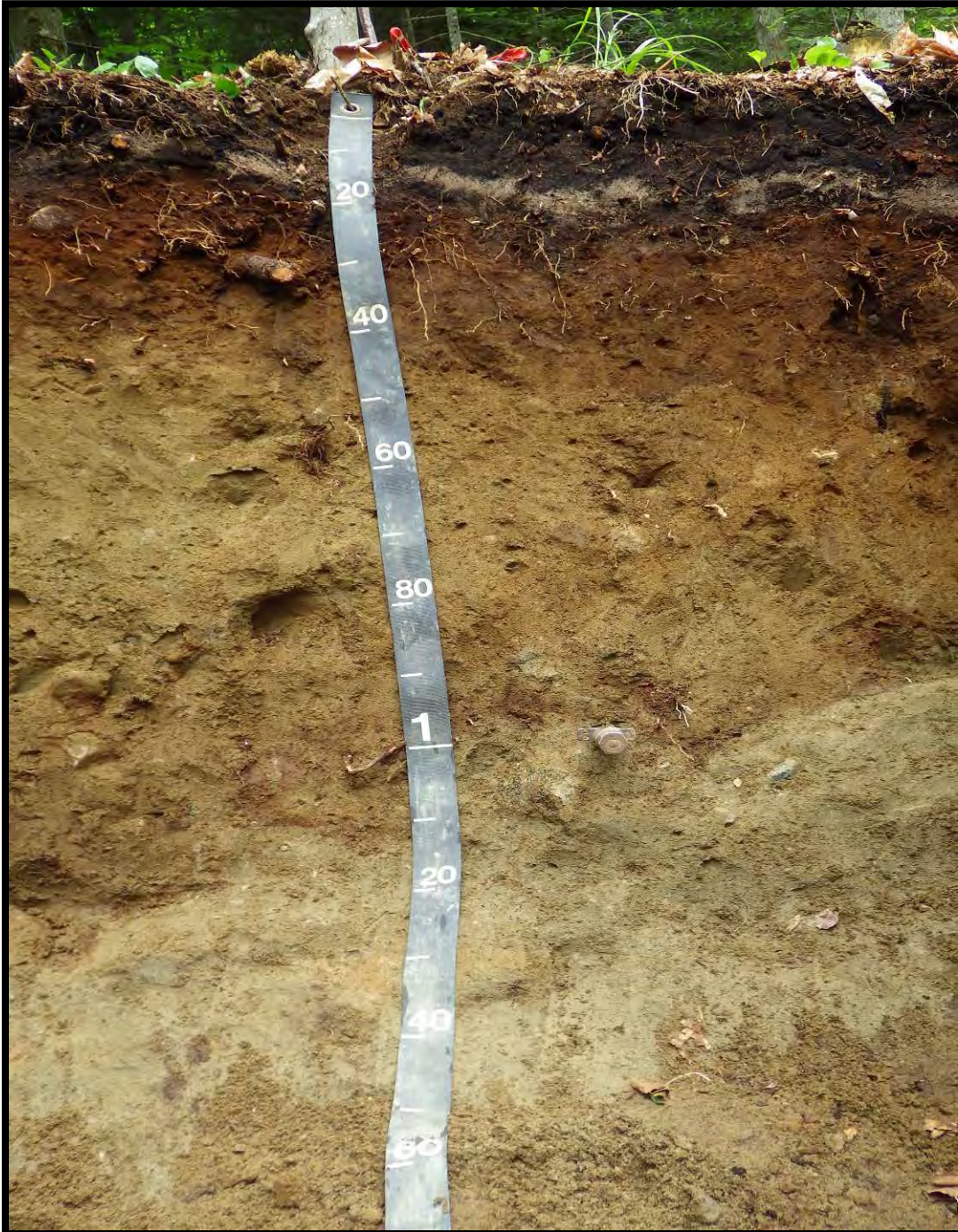
# Heaven Hill



● Soil pit site

Soil Map Legend – Essex county, New York  
SkB Skerry loam, 3 to 8 percent slopes





Oe--0 to 2 centimeters; dark reddish brown (5YR 2.5/2) moderately decomposed plant material; weak fine granular structure; very friable; many fine and very fine, and common medium roots; very strongly acid, pH 4.8; clear smooth boundary.

Oa--2 to 15 centimeters; very dark red (2.5YR 2.5/2) highly decomposed plant material; weak fine subangular blocky parting to weak fine granular structure; very friable; many fine and very fine, and common medium roots; very strongly acid, pH 4.8; abrupt wavy boundary.

E--15 to 20 centimeters; dark gray (7.5YR 4/1) loamy fine sand; weak fine subangular blocky structure; very friable; few very fine, fine, and medium roots; 5 percent gravel; very strongly acid, pH 4.8; abrupt wavy boundary.

Bhs--20 to 26 centimeters; dark reddish brown (5YR 3/2) fine sandy loam/sandy loam; weak fine and medium subangular blocky structure; very friable; common fine and very fine, and few medium roots; 10 percent gravels; strongly acid, pH 5.2; clear wavy boundary.

Bs--26 to 48 centimeters; dark reddish brown (5YR 3/4) sandy loam/fine sandy loam; weak fine and medium subangular blocky structure; friable; common fine, and few very fine, medium, and coarse roots; 10 percent gravel; strongly acid, pH 5.4; clear wavy boundary.

BC--48 to 94 centimeters; brown (10YR 4/3) gravelly loamy sand/sandy loam; weak fine and medium subangular blocky structure; friable; few fine, very fine, and medium roots; few medium and coarse prominent strong brown (7.5YR 4/6), moist, masses of oxidized iron on faces of peds, and few medium and coarse distinct dark grayish brown (2.5YR 4/2), moist, iron depletions on faces of peds; 15 percent gravel and 2 percent cobble; moderately acid, pH 5.8; ; clear wavy boundary.

Cd--94 to 150 centimeters; olive brown (2.5R 4/3) gravelly loamy sand; massive with medium and thick plate like divisions; very firm; brittle; few medium and coarse prominent strong brown (7.5YR 4/6), moist, masses of oxidized iron on faces of peds, few medium and coarse distinct dark grayish brown (2.5YR 4/2), moist, iron depletions on plate surfaces; 15 percent gravel and 1 percent cobble; moderately acid, pH 5.8.

*"Proxy" lab data for this pedon found in attachment 2*

## **SKERRY TAX - COARSE-LOAMY, ISOTIC, FRIGID AQUIC HAPLORTHODS**





Ap--0 to 16 centimeters; very dark grayish brown (10YR 3/2) loam/fine sandy loam; weak fine granular structure; friable; many fine and very fine roots; 5 percent gravels; slightly acid, pH 6.4; ; abrupt smooth boundary.

Bs--16 to 27 centimeters; 80 percent strong brown (7.5YR 4/6) and 20 percent yellowish brown (10YR 5/6) sandy loam/fine sandy loam; weak fine and medium subangular blocky structure; friable; common fine roots; very few fine tubular pores; 8 percent gravels and 1 percent cobble; slightly acid, pH 6.2; ; clear wavy boundary.

BC1--27 to 43 centimeters; dark yellowish brown (10YR 3/4) gravelly sandy loam; weak fine and medium subangular blocky structure; friable; few fine roots; few fine tubular pores; 14 percent gravels and 1 percent cobble; moderately acid, pH 6.0; ; clear smooth boundary.

BC2--43 to 78 centimeters; olive brown (2.5Y 4/3) gravelly sandy loam/loamy sand; weak coarse subangular blocky structure parting to weak medium and fine subangular blocky structure; firm; very few fine roots; common medium and fine prominent strong brown (7.5YR 5/8) and yellowish red (5YR 5/8), moist, masses of oxidized iron in matrix; 14 percent gravel and 2 percent cobble; moderately acid, pH 5.8; ; clear smooth boundary.

Cd--78 to 120 centimeters; dark grayish brown (2.5Y 4/2) gravelly loamy sand; massive structure with medium and thick plate like divisions; very firm; brittle; 16 percent gravel and 3 percent cobble; moderately acid, pH 5.8.

*"Proxy" lab data for this pedon found in attachment 2*

## BECKET (CULTIVATED) - COARSE-LOAMY, ISOTIC, FRIGID OXYAQUIC HAPLORTHODS



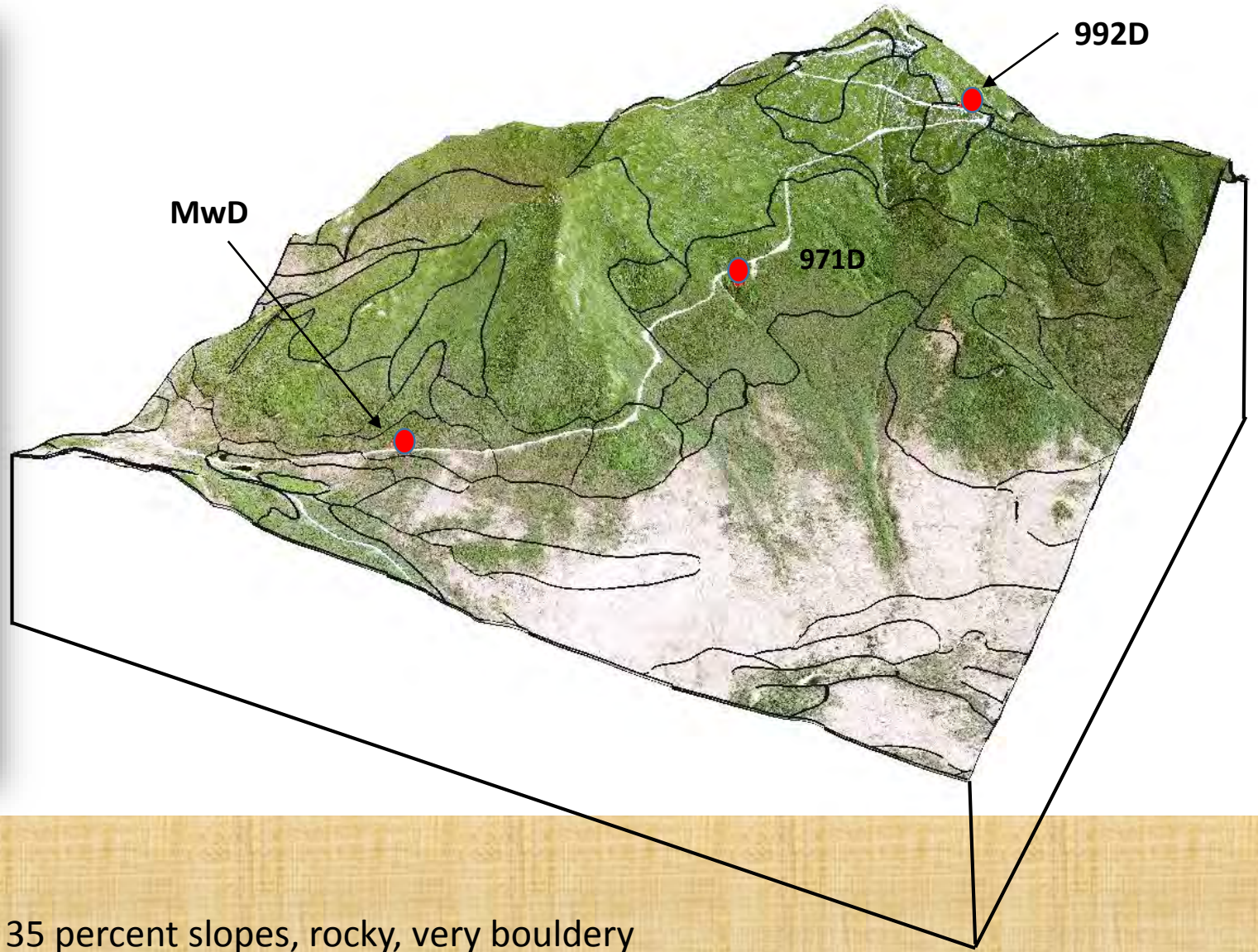
[illegible]

- Soil pit site

MwD Mundalite-Rawsonville complex, 15 t

971D Esther-Wallface complex, 15 to 35 percent slopes, rocky, very bouldery

992D Wallface-Skylight complex. 15 to 35 percent slopes. very rocky. very b

[illegible]



## AMPERSAND - COARSE-LOAMY, ISOTIC, FRIGID TYPIC ENDOAQUODS



Oi--0 to 4 centimeters (0.0 to 1.6 inches); Error; common very fine roots throughout; very strongly acid, pH 4.6, Unspecified; abrupt smooth boundary. common very fine roots throughout

Oa--4 to 19 centimeters (1.6 to 7.5 inches); black (5Y 2/1) interior Error; moderate fine and medium granular structure; very friable; common medium roots throughout and many fine roots; very strongly acid, pH 4.6, Unspecified; abrupt smooth boundary. Lab sample # 87P03281. many fine roots; common medium roots throughout

BE--19 to 24 centimeters (7.5 to 9.4 inches); dark reddish brown (5YR 3/4) interior and reddish gray (5YR 5/2) interior and dark reddish brown (5YR 3/2) interior sandy loam; weak fine and medium subangular blocky structure; friable, nonsticky, nonplastic; common medium roots throughout and common fine roots; many very fine and fine interstitial pores; 2 percent faint , moist, iron stains on sand and gravel and 15 percent prominent , moist, iron stains on sand and gravel and 55 percent faint , moist, iron stains on sand and gravel; 5 percent 2 to 75-millimeter Mixed rock fragments; very strongly acid, pH 5.0, Unspecified; abrupt broken boundary. Lab sample # 87P03282. (5YR 3/2) is the E color. Moderately smeary.; few iron stains surface features on sand and gravel; very few iron stains surface features on sand and gravel; many iron stains surface features on sand and gravel; common fine roots; common medium roots throughout

Bh1--24 to 37 centimeters (9.4 to 14.6 inches); 40 percent dark reddish brown (5YR 3/4) interior and 40 percent dark reddish brown (5YR 3/2) interior and 20 percent dark reddish brown (5YR 2/2) interior sandy loam; weak fine subangular blocky, and weak fine and medium granular structure; friable, nonsticky, nonplastic; common medium roots throughout and common fine roots; common very fine and fine interstitial pores; 37 percent prominent , moist, iron stains on sand and gravel and 55 percent distinct , moist, iron stains on sand and gravel; 5 percent 2 to 75-millimeter Mixed rock fragments; very strongly acid, pH 5.0, Phenol red; clear wavy boundary. Lab sample # 87P03283. Moderately smeary.; many iron stains surface features on sand and gravel; common iron stains surface features on sand and gravel; common fine roots; common medium roots throughout

Bh2--37 to 50 centimeters (14.6 to 19.7 inches); 30 percent very dusky red (2.5YR 2/2) interior and 70 percent dusky red (2.5YR 3/2) interior sandy loam; weak fine and medium subangular blocky, and moderate fine and medium granular structure; friable, nonsticky, nonplastic; common medium roots throughout and common fine roots; common very fine and fine interstitial pores; 37 percent prominent , moist, iron stains on sand and gravel and 55 percent distinct , moist, iron stains on sand and gravel; 5 percent 2 to 75-millimeter Mixed rock fragments; strongly acid, pH 5.2, Phenol red; clear wavy boundary. Lab sample # 87P03284. Moderately smeary.; many iron stains surface features on sand and gravel; common iron stains surface features on sand and gravel; common fine roots; common medium roots throughout

Bhs--50 to 74 centimeters (19.7 to 29.1 inches); 40 percent dark reddish brown (5YR 3/2) interior and 40 percent dark reddish brown (5YR 3/3) interior and 20 percent dark reddish brown (5YR 2/2) interior gravelly sandy loam; weak fine and medium subangular blocky, and weak fine and medium granular structure; friable, nonsticky, nonplastic; common very fine roots and few fine roots throughout; common fine interstitial pores; 37 percent prominent , moist, iron stains on sand and gravel and 55 percent distinct , moist, iron stains on sand and gravel; 25 percent 2 to 75-millimeter Mixed rock fragments; strongly acid, pH 5.4, Phenol red. Lab sample # 87P03285. Saturated with water. Water moving through horizon and pouring in pit. Requires contain builing. Friable but peds pop and are brittle. Moderately smeary.; many iron stains surface features on sand and gravel; common iron stains surface features on sand and gravel; common very fine roots; few fine roots throughout

Cd--74 to 94 centimeters (29.1 to 37.0 inches); .

*Lab data for this pedon found in attachment 2*



## ***ESTHER – MEDIAL, AMORPHIC AQUANDIC HUMICRYODS***



Oi--0 to 3 centimeters (0.0 to 1.2 inches); very dark brown (7.5YR 2.5/2) rubbed slightly decomposed plant material; weak medium granular structure; very friable; many very fine roots throughout and many fine roots throughout; extremely acid, pH 4.0, Phenol red; clear smooth boundary. Lab sample # 09N02311

Oe--3 to 10 centimeters (1.2 to 3.9 inches); black (7.5YR 2.5/1) rubbed moderately decomposed plant material; weak fine granular structure; very friable; many very fine roots throughout and common medium roots throughout and many fine roots throughout; extremely acid, pH 4.0, Phenol red; clear wavy boundary. Lab sample # 09N02312

Oa--10 to 20 centimeters (3.9 to 7.9 inches); black (N 2.5/0) rubbed highly decomposed plant material; weak medium granular, and weak fine granular structure; very friable; common medium roots throughout and common fine roots throughout and few coarse roots throughout; extremely acid, pH 4.0, Phenol red; abrupt wavy boundary. Lab sample # 09N02313

E--20 to 25 centimeters (7.9 to 9.8 inches); gray (5YR 5/1) broken face fine sandy loam; weak fine subangular blocky, and weak medium subangular blocky structure; very friable; common medium roots throughout and common fine roots throughout; 5 percent subrounded unspecified fragments; very strongly acid, pH 4.8, Phenol red; abrupt wavy boundary. Lab sample # 09N02314

Bhs1--25 to 56 centimeters (9.8 to 22.0 inches); dusky red (2.5YR 3/2) broken face fine sandy loam; weak coarse subangular blocky, and weak medium subangular blocky structure; friable; few medium roots throughout and common fine roots throughout; 3 percent subrounded unspecified fragments and 10 percent subrounded unspecified fragments; very strongly acid, pH 5.0, Phenol red; moderately smeary; clear wavy boundary. Lab sample # 09N02315

Bhs2--56 to 71 centimeters (22.0 to 28.0 inches); dark reddish brown (2.5YR 3/3) broken face gravelly fine sandy loam; weak coarse subangular blocky, and weak medium subangular blocky structure; friable; few fine roots throughout; 5 percent subrounded unspecified fragments and 15 percent subrounded unspecified fragments; very strongly acid, pH 5.0, Phenol red; moderately smeary; clear wavy boundary. Lab sample # 09N02316

BC--71 to 84 centimeters (28.0 to 33.1 inches); brown (10YR 4/3) broken face gravelly sandy loam; thick platy, and structureless massive, and medium platy; very firm; brittle; 1 percent fine distinct 7.5YR 5/1), moist, iron depletions and 5 percent medium prominent 2.5YR 3/6), moist, masses of oxidized iron and 5 percent fine prominent 2.5YR 3/6), moist, masses of oxidized iron; 2 percent subrounded unspecified fragments and 20 percent subrounded unspecified fragments; strongly acid, pH 5.2, Phenol red; clear wavy boundary. Lab sample # 09N02317

Cd--84 to 183 centimeters (33.1 to 72.0 inches); olive brown (2.5Y 4/3) broken face gravelly loamy sand; structureless massive, and medium platy, and thick platy; very firm; brittle; 5 percent medium prominent 2.5YR 3/4), moist, masses of oxidized iron and 5 percent coarse prominent 2.5YR 3/4), moist, masses of oxidized iron; 1 percent subrounded unspecified fragments and 21 percent subrounded unspecified fragments; strongly acid, pH 5.2, Phenol red. Lab sample # 09N02318

*Lab data for this pedon found in attachment 2*





**Oe--** 0 to 4 inches, dark reddish brown (5YR 2.5/2) moderately decomposed (hemic) plant material; weak fine granular structure; friable; many fine and medium, and common coarse roots; 2 percent gravels and 1 percent stones; extremely acid; gradual wavy boundary.

**Oa--** 4 to 9 inches, black (5YR 2.5/1) highly decomposed (sapric) plant material; weak fine granular structure; friable; many fine and medium, and common coarse roots; 3 percent gravels and 1 percent stones; extremely acid, clear wavy boundary. (Combined thickness of the O horizons is 6 to 20 inches.)

**E--** 9 to 10 inches; dark reddish gray (2.5YR 4/1) loamy sand; weak fine granular structure; friable; common fine and few medium roots; 3 percent gravels and 2 percent stones; extremely acid; clear wavy boundary. (1 to 5 inches thick)

**Bhs1--** 10 to 18 inches; reddish black (2.5YR 2.5/1) loam; weak fine and medium granular structure; friable; common fine and few medium roots; 3 percent gravels and 2 percent stones; extremely acid; gradual wavy boundary.

**Bhs2--** 18 to 25 inches; dark reddish brown (5YR 2.5/2) sandy loam; weak medium subangular blocky structure; friable; few fine roots; 5 percent gravels and 4 percent stones; very strongly acid; clear wavy boundary.

**Bhs3--** 25 to 35 inches; dark reddish brown (5YR 3/2) gravelly sandy loam; weak medium subangular blocky structure; friable; 24 percent gravels and 4 percent stones; very strongly acid; clear wavy boundary. (Combined thickness of the Bhs horizons is 10 to 25 inches.)

**BC--** 35 to 38 inches; brown (10YR 4/3) fine sandy loam; weak medium subangular blocky structure; friable; 10 percent gravels and 4 percent stones; very strongly acid; abrupt wavy boundary. (0 to 10 inches thick)

**R--** 38 inches; Marcy anorthosite bedrock.

## WALLFACE - MEDIAL, AMORPHIC ANDIC HUMICRYODS



## MEDIAL, MIXED TYPIC FULVICRYAND



Oi--0 to 5 centimeters (0.0 to 2.0 inches); undecomposed sphagnum moss.

Oa--5 to 8 centimeters (2.0 to 3.1 inches); very dark gray (5YR 3/1) Error; moderate fine granular structure; very friable; many very fine and fine roots and few medium roots; extremely acid, pH 4.0, Hellige-Truog; 30% mineral; abrupt wavy boundary. Lab sample # 94P01837

Bh--8 to 35 centimeters (3.1 to 13.8 inches); dark reddish brown (5YR 3/2) gravelly coarse sandy loam; weak medium and coarse subangular blocky structure; very friable; strongly fluid; many very fine and fine roots and common medium roots and few coarse roots; 5 percent 75 to 250-millimeter unspecified fragments and 10 percent 250 to 600-millimeter unspecified fragments and 15 percent 2 to 75-millimeter unspecified fragments; very strongly acid, pH 4.8, Hellige-Truog; gradual wavy boundary. Lab sample # 94P01838

Bhs--35 to 53 centimeters (13.8 to 20.9 inches); dark brown (7.5YR 3/2) gravelly fine sandy loam; weak medium and coarse subangular blocky structure; friable; strongly fluid; few medium roots and common fine roots; 5 percent 250 to 600-millimeter unspecified fragments and 10 percent 75 to 250-millimeter unspecified fragments and 15 percent 2 to 75-millimeter unspecified fragments; very strongly acid, pH 4.8, Hellige-Truog; gradual wavy boundary. Lab sample # 94P01839

BC--53 to 66 centimeters (20.9 to 26.0 inches); brown (10YR 4/3) stony loamy coarse sand; weak medium subangular blocky structure; friable; weakly smeary; 5 percent 75 to 250-millimeter unspecified fragments and 10 percent 2 to 75-millimeter unspecified fragments and 15 percent 250 to 600-millimeter unspecified fragments; strongly acid, pH 5.3, Hellige-Truog; abrupt wavy boundary. Lab sample # 94P01840

R--66 to 91 centimeters (26.0 to 35.8 inches); Whiteface anorthosite bedrock.

*Lab data for this pedon found in attachment 2*

## PEDON DESCRIPTION

sitetext.textsubcat

**Print Date:** Jun 14 2016

**Description Date:** Jun 1 1987

**Describer:** Brian Grisi, Will Hanna, Steve Indrick

**Site ID:** S1987NY031002

**Site Note:**

**Pedon ID:** 87NY031002

**Pedon Note:** Pit is 25 feet into woods. Sand grains coated with oxides, viewed with 10x and 20x hand lenses. Less than 1% stones throughout profile.

**Lab Source ID:** SSL

**Lab Pedon #:** 87P0618

**User Transect ID:**

**Soil Name as Described/Sampled:** Potsdam

**Classification:**

**Soil Name as Correlated:** *BECKET*

**Classification:** Coarse-loamy, mixed, frigid Typic Haplorthods

**Pedon Type:**

**Pedon Purpose:** full pedon description

**Taxon Kind:** series

**Associated Soils:**

**Physiographic Division:**

**Physiographic Province:**

**Physiographic Section:**

**State Physiographic Area:**

**Local Physiographic Area:**

**Country:**

**State:** New York

**County:** Essex

**MLRA:** 143 -- Northeastern Mountains

**Soil Survey Area:**

**Map Unit:**

**Quad Name:**

**Std Latitude:** 44.2455559

**Std Longitude:** -74.0377808

**Primary Earth Cover:** Tree cover

**Secondary Earth Cover:** Hardwoods

**Vegetation:** balsam fir, red spruce

**Parent Material:**

**Bedrock Kind:**



**Geomorphic Setting:** on summit of interfluvium of river valley  
on summit of interfluvium of dune

**Upslope Shape:** linear

**Cross Slope Shape:**

**Particle Size Control Section:** 25 to 100 cm.

**Description origin:** Converted from SSL-CMS data

**Diagnostic Features:** umbric epipedon 0 to 7 cm.  
spodic horizon 7 to 30 cm.

**Bedrock Depth:**

**Bedrock Hardness:**

**Bedrock Fracture Interval:**

**Surface Fragments:** 0.1 percent

**Description database:** KSSL

**Cont. Site ID:** S1987NY031002

**Pedon ID:** 87NY031002

Slope (%)	Elevation (meters)	Aspect (deg)	MAAT (C)	MSAT (C)	MWAT (C)	MAP (mm)	Frost-Free Days	Drainage Class	Slope Length (meters)	Upslope Length (meters)
1.0	631.0	135	4.5	16.0	-9.0	100		well		

Oi--0 to 4 centimeters (0.0 to 1.6 inches); Error; many very fine roots throughout; extremely acid, pH 4.0, Unspecified; abrupt smooth boundary. Lab sample # 87P03256. Spruce needles and twig.; many very fine roots throughout

Oe--4 to 7 centimeters (1.6 to 2.8 inches); dark reddish brown (5YR 2/2) interior hemic material; very friable; common medium roots throughout and many fine roots; extremely acid, pH 4.2, Unspecified; abrupt smooth boundary. Lab sample # 87P03257. 50% unrubbed fiber, 20% rubbed.; many fine roots; common medium roots throughout

A/E--7 to 14 centimeters (2.8 to 5.5 inches); black (5YR 2/1) interior very fine sandy loam, light gray (5YR 7/1) interior and pinkish gray (5YR 6/2) interior, dry; weak fine subangular blocky, and weak fine and medium granular structure; very friable, nonsticky, nonplastic; common medium roots throughout and many fine roots; many very fine interstitial pores; 37 percent distinct, moist, iron stains on sand and gravel; 2 percent 75 to 250-millimeter Mixed rock fragments and 2 percent 2 to 75-millimeter Mixed rock fragments; extremely acid, pH 4.2, Unspecified; abrupt wavy boundary. Lab sample # 87P03258. High organic material maybe in Oa horizon. Many micro size pelleted surfaces. Many clean sand grains. Discontinuous and irregular pockets of an E horizon mixed in. The A colors are (10YR 6/2, 4/2); (7.5YR 5/2) dry and (5YR 5/2) moist.; common iron stains surface features on sand and gravel; many fine roots; common medium roots throughout



Bhs--14 to 20 centimeters (5.5 to 7.9 inches); dark reddish brown (5YR 3/2) interior and reddish brown (5YR 4/4) interior and dark reddish brown (5YR 3/3) interior very fine sandy loam; moderate fine granular structure; very friable, nonsticky, nonplastic; common medium roots throughout and many fine roots; few very fine tubular and many very fine interstitial pores; 55 percent distinct , moist, iron stains on sand and gravel; 2 percent 75 to 250-millimeter Mixed rock fragments and 2 percent 2 to 75-millimeter Mixed rock fragments; very strongly acid, pH 4.6, Unspecified; clear wavy boundary. Lab sample # 87P03259. Moderately smeary. 25 % 0.5-2 mm soil pellets or nodules.; many iron stains surface features on sand and gravel; many fine roots; common medium roots throughout

Bs1--20 to 27 centimeters (7.9 to 10.6 inches); dark reddish brown (5YR 3/4) interior very fine sandy loam; weak medium subangular blocky, and weak medium granular structure; very friable, nonsticky, nonplastic; few medium roots throughout and many fine roots; few very fine and fine tubular and many very fine interstitial pores; 55 percent distinct , moist, iron stains on sand and gravel; 2 percent 75 to 250-millimeter Mixed rock fragments and 2 percent 2 to 75-millimeter Mixed rock fragments; very strongly acid, pH 4.8, Unspecified; gradual wavy boundary. Lab sample # 87P03260. Moderately smeary. 2-5% 0.5-2 mm soil pellets or nodules.; many iron stains surface features on sand and gravel; many fine roots; few medium roots throughout

Bs2--27 to 37 centimeters (10.6 to 14.6 inches); brown (7.5YR 4/4) interior very fine sandy loam; weak medium subangular blocky, and weak fine subangular blocky structure; very friable, nonsticky, nonplastic; few medium roots throughout; few very fine and fine tubular and many very fine interstitial pores; 55 percent distinct , moist, iron stains on sand and gravel; 2 percent 75 to 250-millimeter Mixed rock fragments and 2 percent 2 to 75-millimeter Mixed rock fragments; very strongly acid, pH 4.6, Unspecified; gradual wavy boundary. Lab sample # 87P03261. Moderately smeary.; many iron stains surface features on sand and gravel; few medium roots throughout

2BC--37 to 57 centimeters (14.6 to 22.4 inches); 90 percent brown (10YR 4/3) interior and 10 percent brown (7.5YR 4/4) interior very fine sandy loam; moderate medium subangular blocky, and moderate fine subangular blocky structure; friable, nonsticky, nonplastic; few medium roots throughout and few fine roots; few very fine and fine tubular and many very fine interstitial pores; 37 percent faint , moist, iron stains on sand and gravel; 2 percent 75 to 250-millimeter Mixed rock fragments and 3 percent 2 to 75-millimeter Mixed rock fragments; very strongly acid, pH 4.8, Unspecified; clear smooth boundary. Lab sample # 87P03262. Slightly smeary.; common iron stains surface features on sand and gravel; few fine roots; few medium roots throughout

2C--57 to 175 centimeters (22.4 to 68.9 inches); grayish brown (2.5Y 5/2) interior fine sandy loam; 11 percent medium distinct (10YR 4/4) mottles; moderate medium platy structure; firm, nonsticky, nonplastic; few fine roots throughout; many very fine interstitial and few fine vesicular and tubular pores; 2 percent faint , moist, iron stains on sand and gravel and 2 percent faint , moist, coats in root channels and/or pores; 2 percent 75 to 250-millimeter Mixed rock fragments and 8 percent 2 to 75-millimeter Mixed rock fragments; strongly acid, pH 5.2, Phenol red; gradual wavy boundary. Lab sample # 87P03263. Stripping color (10YR 6/2) horizontal along plate faces (7.5YR 5/8) and (5YR 5/6) along pores.; very few iron stains surface features on sand and gravel; very few coats surface features in root channels and/or pores; few fine roots throughout; common medium distinct 10YR44 mottles

2Cd2--127 to 157 centimeters (50.0 to 61.8 inches); dark grayish brown (2.5Y 4/2) interior sandy loam; weak fine platy structure; firm, nonsticky, nonplastic; many very fine interstitial and few fine vesicular and tubular pores; 3 percent 75 to 250-millimeter Mixed rock fragments and 12 percent 2 to 75-millimeter Mixed rock fragments; moderately acid, pH 5.6, Phenol red. Lab sample # 87P03265. Pocket and lens of loamy sand. Dried clods slake rapidly in water.

2Cd1--175 to 127 centimeters (68.9 to 50.0 inches); dark grayish brown (2.5Y 4/2) interior gravelly fine sandy loam; 11 percent medium distinct (2.5YR 5/4) mottles; weak fine platy structure; firm, nonsticky, nonplastic; many very fine interstitial and few fine vesicular and tubular pores; 5 percent 75 to 250-millimeter Mixed rock fragments and 15 percent 2 to 75-millimeter Mixed rock fragments; moderately acid, pH 5.6, Phenol red; gradual wavy boundary. Lab sample # 87P03264. Pockets and lens of loam sand. Stripping color (10YR 6/2) horizontal along plate faces (7.5YR 5/8) and (5YR 5/6) along pores.; common medium distinct 2.5YR54 mottles

\*\*\* Primary Characterization Data \*\*\*  
( Essex, New York )

Pedon ID: 87NY031002

Print Date: Jun 14 2016 2:09PM

Sampled as on May 30, 1987: Potsdam ; Coarse-loamy, mixed, frigid Typic Haplorthod  
Revised to correlated: Potsdam ; Coarse-loamy, mixed, frigid Typic Haplorthods

SSL - Project CP87NY201 NEW YORK ISCOM TOUR  
- Site ID S1987NY031002 Lat: 44° 14' 44.00" north Long: 74° 2' 16.01" west MLRA: 143  
- Pedon No. 87P0618  
- General Methods 1B1A, 2A1, 2B

United States Department of Agriculture  
Natural Resources Conservation Service  
National Soil Survey Center  
Soil Survey Laboratory  
Lincoln, Nebraska 68508-3866

Layer	Horizon	Orig Hzn	Depth (cm)	Field Label 1	Field Label 2	Field Label 3	Field Texture	Lab Texture
87P03256	Oi	OIC3	0-3					
87P03257	Oe	O E	3-0					
87P03258	A / E	A/E	0-7					FSL
87P03259	Bhs	BHS	7-13					FSL
87P03260	Bs1	BS1	13-20					FSL
87P03261	Bs2	BS2	20-30					FSL
87P03262	2BC	2BC	30-50					SL
87P03263	2C	2C	50-68					LS
87P03264	2Cd1	2CD1	68-120					LS
87P03265	2Cd2	2CD2	120-150					LS

Calculation Name	Pedon Calculations	Result	Units of Measure
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CEC Activity, CEC7/Clay, Weighted Average	1.07	(NA)
Clay, total, Weighted Average	3	% wt
Weighted Particles, 0.1-75mm, 75 mm Base	66	% wt
Volume, >2mm, Weighted Average	16	% vol
Clay, carbonate free, Weighted Average	3	% wt

Weighted averages based on control section: 25-100 cm

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( Essex, New York )

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Sampled As : Potsdam

Coarse-loamy, mixed, frigid Typic Haplorthod

USDA-NRCS-NSSC-Soil Survey Laboratory

; Pedon No. 87P0618

PSDA & Rock Fragments				-1-	-2-	-3-	-4-	-5-	-6-	-7-	-8-	-9-	-10-	-11-	-12-	-13-	-14-	-15-	-16-	-17-	-18-
Layer	Depth	Horz	Prep	(- - - - - Total - - - - -)				(- - Clay - - -)		(- - - - - Silt - - - - -)		( - - - - - Sand - - - - - )				( Rock Fragments (mm) )					
				Lab	Clay	Silt	Sand	Fine	CO <sub>3</sub>	Fine	Coarse	VF	F	M	C	VC	(- - - - - Weight - - - - - )				>2 mm
				Text-	<	.002	.05	<	<	.002	.02	.05	.10	.25	.5	1	2	5	20	.1-	wt %
				ure	.002	-.05	-.2	.0002	.002	-.02	-.05	-.10	-.25	-.50	-1	-2	-5	-20	-75	75	whole
				(- - - - - % of <2mm Mineral Soil - - - - - )												(- - - - - % of <75mm - - - - - )				soil	
				3A1a1a	3A1a1a	3A1a1a	3A1a1a	3A1a1a		3A1a1a	3A1a1a	3A1a1a	3A1a1a	3A1a1a	3A1a1a	3A1a1a	3B1	3B1	3B1		
87P03256	0-3	Oi	S														1	--	--		
87P03257	3-0	Oe	S														1	--	--		
87P03258	0-7	A / E	S	fsl	3.5	26.1	70.4	1.5		8.6	17.5	20.9	23.0	14.3	8.3	3.9	1	1	--	51	6
87P03259	7-13	Bhs	S	fsl	2.5	26.0	71.5	1.1		11.0	15.0	25.3	22.6	12.8	7.1	3.7	--	--	--	46	7
87P03260	13-20	Bs1	S	fsl	3.6	24.3	72.1	1.9		9.1	15.2	25.1	22.9	13.2	7.7	3.2	4	5	5	54	18
87P03261	20-30	Bs2	S	fsl	3.8	28.0	68.2	2.8		11.7	16.3	21.6	22.2	13.8	6.7	3.9	5	5	--	52	15
87P03262	30-50	2BC	S	sl	3.1	25.1	71.8	1.2		12.1	13.0	17.7	24.0	15.6	8.9	5.6	6	6	1	61	16
87P03263	50-68	2C	S	ls	2.8	15.7	81.5	1.1		6.3	9.4	17.6	30.0	19.0	10.9	4.0	7	5	--	68	15
87P03264	68-120	2Cd1	S	ls	3.4	20.6	76.0	1.2		9.4	11.2	14.8	26.9	18.4	9.6	6.3	10	9	7	71	30
87P03265	120-150	2Cd2	S	ls	3.7	15.4	80.9	1.4		6.7	8.7	14.4	28.3	23.9	11.1	3.2	6	4	8	73	21

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Sampled As : Potsdam

Coarse-loamy, mixed, frigid Typic Haplorthod

USDA-NRCS-NSSC-Soil Survey Laboratory

; Pedon No. 87P0618

Bulk Density & Moisture				-1-	-2-	-3-	-4-	-5-	-6-	-7-	-8-	-9-	-10-	-11-	-12-	-13-
				(Bulk Density)	Cole		(----- Water Content -----)					WRD	Aggst			
				33	Oven	Whole	6	10	33	1500	1500 kPa	Ratio	Whole	Stabl	(- - Ratio/Clay - -)	
				kPa	Dry	Soil	kPa	kPa	kPa	kPa	Moist	AD/OD	Soil	2-0.5mm	CEC7	1500 kPa
Layer	Depth	Horz	Prep	(--- g cm <sup>-3</sup> ---)	(----- % of < 2mm -----)											
				4A1d	4A1h		4B1c	4B1c	4B1c	3C2a1a	4B2b	3D1	4C1	3F1a1a	8D1	8D1
87P03256	0-3	Oi	S							57.8		1.054				
87P03256	0-3	Oi	M								62.3					
87P03257	3-0	Oe	S	0.16	0.22				276.1	58.8		1.055				
87P03257	3-0	Oe	M								66.7					
87P03258	0-7	A / E	S							17.6		1.023		79	9.31	5.03
87P03259	7-13	Bhs	S	0.69	0.80	0.049			45.1	16.5		1.000	0.17		12.48	6.60
87P03259	7-13	Bhs	M								20.6					
87P03260	13-20	Bs1	S	1.02	1.04	0.006	46.3	46.3	44.3	12.1		1.027	0.18	47	6.39	3.36
87P03260	13-20	Bs1	M								25.3					
87P03261	20-30	Bs2	S	1.07	1.14	0.020			33.5	7.7		1.016	0.18	61	3.05	2.03
87P03261	20-30	Bs2	M								15.3					
87P03262	30-50	2BC	S	1.51	1.52	0.002			12.7	4.5		1.010	0.04	67	1.71	1.45
87P03262	30-50	2BC	M								9.4					
87P03263	50-68	2C	S	1.85	1.85	--	5.6	5.6	4.5	1.8		1.004	0.03	45	0.82	0.64
87P03263	50-68	2C	M								2.7					
87P03264	68-120	2Cd1	S	1.85	1.86	0.001			7.5	1.4		1.003	0.08	41	0.50	0.41
87P03264	68-120	2Cd1	M								1.8					
87P03265	120-150	2Cd2	S	1.97	1.98	0.001			6.5	1.4		1.002	0.08	88	0.51	0.38
87P03265	120-150	2Cd2	M								1.8					
Water Content				-1-	-2-	-3-	-4-	-5-	-6-	-7-	-8-	-9-	-10-	-11-	-12-	-13-



Layer	Depth (cm)	Horz	Prep	(- - Atterberg - -)		(- - - - Bulk Density - - - -)			(- - - - - Water Content - - - - -)							
				(- - - Limits - - -)		Field	Recon	Recon	Field	Recon	(- - - - - Sieved Samples - - - - -)					
				LL	PI		33	Oven		33	6	10	33	100	200	500
							kPa	Dry		kPa	kPa	kPa	kPa	kPa	kPa	kPa
				pct <0.4mm			(- - - - - g cm <sup>-3</sup> - - - - -)				(- - - - - % of < 2mm - - - - -)					
												3C1a1a				
87P03261	20-30	Bs2	S									29.3				

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Sampled As : Potsdam

Coarse-loamy, mixed, frigid Typic Haplorthod

USDA-NRCS-NSSC-Soil Survey Laboratory

; Pedon No. 87P0618

Carbon & Extractions				-1-	-2-	-3-	-4-	-5-	-6-	-7-	-8-	-9-	-10-	-11-	-12-	-13-	-14-	-15-	-16-	-17-	-18-	-19-					
Layer	Depth (cm)	Horz	Prep	(- - - - - Total - - - - -)		Est	OC	C/N	(- - - Dith-Cit Ext - - -)			(- - - - - Ammonium Oxalate Extraction - - - - -)							(- - - Na Pyro-Phosphate - - -)								
				C	N	S	OC	(WB)	Ratio	Fe	Al	Mn	Al+½Fe	ODOE	Fe	Al	Si	Mn	C	Fe	Al	Mn					
				(- - - - - % of <2 mm - - - - -)								(- - - - - % of < 2mm - - - - -)												mg kg <sup>-1</sup> (- - - - - % of < 2mm - - - - -)			
				6A2d	6B3a			6A1c		6C2b	6G7a	6D2a		8J	6C9a	6G12	6V2	6D5b	6A4a	6C8a	6G10						
87P03256	0-3	Oi	S	39.25	1.904		47.92	25	0.4	0.2	0.1		0.20	0.24	0.19	0.02	400.0	8.2	0.1	0.2							
87P03257	3-0	Oe	S	39.42	1.823		47.33	26	0.4	0.2	--		0.15	0.16	0.10			8.1	0.2	0.1							
87P03258	0-7	A / E	S	9.48	0.518		10.54	20	0.9	0.3	--	0.63	1.22	0.69	0.28			5.0	0.7	0.2							
87P03259	7-13	Bhs	S	6.72	0.299		6.79	23	1.8	1.5	--								1.2	1.6							
87P03260	13-20	Bs1	S	4.89			4.84		1.3	1.6	--	2.69	0.80	0.98	2.20	0.43		4.3	0.6	1.1							
87P03261	20-30	Bs2	S	2.41			2.34		0.8	1.1	--	1.82	0.28	0.43	1.60	0.44		2.5	0.2	0.6							
87P03262	30-50	2BC	S	0.95			0.98		0.6	0.5	--	1.20	0.10	0.21	1.09	0.34		1.4	0.1	0.4							
87P03263	50-68	2C	S	0.24			0.25		0.4	0.1	--	0.49	0.05	0.13	0.42	0.14		0.9	tr	0.2							
87P03264	68-120	2Cd1	S	0.15			0.15		0.4	0.1	--	0.43	0.04	0.22	0.32	0.10		0.8	tr	0.1							
87P03265	120-150	2Cd2	S	0.10			0.11		0.4	0.1	--	0.37	0.04	0.15	0.29	0.09		0.7	tr	0.1							
CEC & Bases				-1-	-2-	-3-	-4-	-5-	-6-	-7-	-8-	-9-	-10-	-11-	-12-	-13-	-14-										



(----- NH <sub>4</sub> OAC Extractable Bases -----)												CEC8	CEC7	ECEC	(---- Base ----)			
Layer	Depth (cm)	Horz	Prep	Ca	Mg	Na	K	Sum	Acid-	Extr	KCl	Sum	NH <sub>4</sub>	Bases	Al	(- Saturation -)		
				cmol(+) kg <sup>-1</sup>														
				(----- 6N2e	6O2d	6P2b	6Q2b	----- 6H5a	6G9b	----- mg kg <sup>-1</sup>	(---- 5A3a	cmol(+) kg <sup>-1</sup> 5A8b	---- 5A3b	(----- 5G1	% 5C3	----- 5C1		
87P03256	0-3	Oi	S	19.9	2.5	0.2	1.9		90.8	0.2			84.9					
87P03257	3-0	Oe	S	11.1	1.4	0.2	1.0		122.2	2.9			102.6					
87P03258	0-7	A / E	S	1.5	0.3	0.1	0.2	2.1	44.0	7.2		46.1	32.6	9.3	77	5	6	
87P03259	7-13	Bhs	S	0.4	0.2	0.1	0.1	0.8	50.5	6.7		51.3	31.2	7.5	89	2	3	
87P03260	13-20	Bs1	S	0.3	--	0.1	tr	0.4	39.1	3.7		39.5	23.0	4.1	90	1	2	
87P03261	20-30	Bs2	S	0.2	tr	tr	--	0.2	24.2	1.8		24.4	11.6	2.0	90	1	2	
87P03262	30-50	2BC	S	0.1	--	tr	--	0.1	12.5	1.0		12.6	5.3	1.1	91	1	2	
87P03263	50-68	2C	S	0.1	--	tr	--	0.1	4.7	0.4		4.8	2.3	0.5	80	2	4	
87P03264	68-120	2Cd1	S	0.1	--	tr	--	0.1	2.5	0.3		2.6	1.7	0.4	75	4	6	
87P03265	120-150	2Cd2	S	0.1	--	tr	tr	0.1	2.8	0.2		2.9	1.9	0.3	67	3	5	

[illegible]



87P03261	20-30	Bs2	S	--
87P03262	30-50	2BC	S	--
87P03263	50-68	2C	S	--
87P03264	68-120	2Cd1	S	--
87P03265	120-150	2Cd2	S	--

pH & Carbonates				-1-	-2-	-3-	-4-	-5-	-6-	-7-	-8-	-9-	-10-	-11-
				(- - - - - pH - - - - -)					(- - Carbonate - -)		(- - Gypsum - - -)			
				CaCl <sub>2</sub>		As CaCO <sub>3</sub>		As CaSO <sub>4</sub> *2H <sub>2</sub> O		Resist				
Layer	Depth (cm)	Horz	Prep	KCl	0.01M	H <sub>2</sub> O	Sat	Oxid	NaF	<2mm	<20mm	<2mm	<20mm	ohms
				4C1a2a	34C1a2a	4C1a2a	(- - - - - % - - - - -)			cm <sup>-1</sup>				
87P03256	0-3	Oi	S	3.6	4.0	4.6			6.3					
87P03257	3-0	Oe	S	2.9	3.2	4.0			6.0					
87P03258	0-7	A / E	S	3.4	3.3	3.8			7.1					
87P03259	7-13	Bhs	S	4.1	4.2	4.3			11.7					
87P03260	13-20	Bs1	S	4.3	4.4	4.6			11.6					
87P03261	20-30	Bs2	S	4.5	4.6	4.8			11.4					
87P03262	30-50	2BC	S	4.6	4.7	4.9			11.2					
87P03263	50-68	2C	S	4.7	4.9	5.1			10.7					
87P03264	68-120	2Cd1	S	4.7	5.0	5.4			10.6					
87P03265	120-150	2Cd2	S	4.6	5.0	5.5			10.4					

\*\*\* Primary Characterization Data \*\*\*

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( Essex, New York )

Print Date: Jun 14 2016 2:09PM

Sampled As : Potsdam

Coarse-loamy, mixed, frigid Typic Haplorthod

USDA-NRCS-NSSC-Soil Survey Laboratory

; Pedon No. 87P0618

Phosphorous	-1-	-2-	-3-	-4-	-5-	-6-	-7-	-8-	-9-	-10-	-11-	-12-
	(- - - - - Phosphorous - - - - -)											KCl
	Melanic NZ	Acid	Anion Exch	Resin Bray	Bray	Olsen	H <sub>2</sub> O	Citric	Mehlich	Extr		

Layer	Depth (cm)	Horz	Index Prep	%	Oxal	AvailableCapacity 1	2	Acid	III	NO <sub>3</sub>
				6S4	(-----)	mg kg <sup>-1</sup>				
87P03258	0-7	A / E	S	44						
87P03259	7-13	Bhs	S	99						
87P03260	13-20	Bs1	S	98						
87P03261	20-30	Bs2	S	90						
87P03262	30-50	2BC	S	72						
87P03263	50-68	2C	S	38						
87P03264	68-120	2Cd1	S	26						
87P03265	120-150	2Cd2	S	34						

### \*\*\* Primary Characterization Data \*\*\*

Pedon ID: 87NY031002

( Essex, New York )

Print Date: Jun 14 2016 2:09PM

Sampled As : Potsdam

Coarse-loamy, mixed, frigid Typic Haplorthod

USDA-NRCS-NSSC-Soil Survey Laboratory

; Pedon No. 87P0618

Clay Mineralogy (<.002 mm)				-1-	-2-	-3-	-4-	-5-	-6-	-7-	-8-	-9-	-10-	-11-	-12-	-13-	-14-	-15-	-16-	-17-	-18-									
				X-Ray						Thermal						Elemental						EGME		Inter						
																SiO <sub>2</sub>						Al <sub>2</sub> O <sub>3</sub>	Fe <sub>2</sub> O <sub>3</sub>	MgO	CaO	K <sub>2</sub> O	Na <sub>2</sub> O	Retn	preta	
																														tion



MI Mica

NX Non-Crystalline

RELATIVE PEAK SIZE:

5 Very Large

4 Large

3 Medium

2 Small

1 Very Small

6 No Peaks

## PEDON DESCRIPTION

**sitetext.textsubcat**

**Print Date:** Jun 14 2016

**Description Date:** Jun 1 1987

**Describer:** Brian Grisi, Will Hanna, Steve Indrick

**Site ID:** S1987NY031003

**Site Note:**

**Pedon ID:** 87NY031003

**Pedon Note:** Pit at edge of plowed field. Field cultivated for about 80 years.  
Few worm casts in the upper 63 cm. Less than 1% stones throughout profile.  
The sand grains are coated with sesquioxides 0-63 cm.

**Lab Source ID:** SSL

**Lab Pedon #:** 87P0619

**User Transect ID:**

**Soil Name as Described/Sampled:** Potsdam

**Classification:**

**Soil Name as Correlated:** *BECKET*

**Classification:** Coarse-loamy, mixed, superactive, frigid Aquic Haplorthods

**Pedon Type:**

**Pedon Purpose:** full pedon description

**Taxon Kind:** taxadjunct

**Associated Soils:**

**Physiographic Division:**

**Physiographic Province:**

**Physiographic Section:**

**Country:**

**State:** New York

**County:** Essex

**MLRA:** 143 -- Northeastern Mountains

**Soil Survey Area:**

**Map Unit:**

**Quad Name:**

**Std Latitude:** 44.2458344

**Std Longitude:** -74.0374985

**Primary Earth Cover:** Crop cover

**Secondary Earth Cover:**

**Vegetation:**

**State Physiographic Area:**

**Local Physiographic Area:**

**Geomorphic Setting:** on summit of interfluvium of upland  
on summit of interfluvium of plain  
on summit of interfluvium of leveled land

**Upslope Shape:** linear

**Cross Slope Shape:**

**Particle Size Control Section:** 25 to 100 cm.

**Description origin:** Converted from SSL-CMS data

**Diagnostic Features:** umbric epipedon 0 to 20 cm.  
spodic horizon 20 to 63 cm.

**Parent Material:**

**Bedrock Kind:**

**Bedrock Depth:**

**Bedrock Hardness:**

**Bedrock Fracture Interval:**

**Surface Fragments:**

**Description database:** KSSL

**Cont. Site ID:** S1987NY031003

**Pedon ID:** 87NY031003

Slope (%)	Elevation (meters)	Aspect (deg)	MAAT (C)	MSAT (C)	MWAT (C)	MAP (mm)	Frost-Free Days	Drainage Class	Slope Length (meters)	Upslope Length (meters)
2.0	631.0	135	4.5	16.0	-9.0	100		well		

1Ap1--0 to 7 centimeters (0.0 to 2.8 inches); dark brown (7.5YR 3/2) crushed very fine sandy loam, 10YR 3/ (10YR 3/), interior, dry; moderate fine and medium granular structure; very friable, nonsticky, nonplastic; few medium roots throughout and many fine roots; many very fine interstitial and few fine vesicular and tubular pores; 2 percent faint, moist, iron stains on sand and gravel; 2 percent 2 to 75-millimeter Mixed rock fragments; slightly acid, pH 6.2, Phenol red; clear smooth boundary. Lab sample # 87P03266. very few iron stains surface features on sand and gravel; many fine roots; few medium roots throughout

1Ap2--7 to 20 centimeters (2.8 to 7.9 inches); dark brown (7.5YR 3/2) interior very fine sandy loam; moderate medium and coarse subangular blocky, and moderate fine granular structure; very friable, nonsticky, nonplastic; few medium roots throughout and common fine roots; few very fine tubular and common very fine interstitial pores; 2 percent faint, moist, iron stains on sand and gravel; 2 percent 2 to 75-millimeter Mixed rock fragments and 10 percent 75 to 250-millimeter Mixed rock fragments; slightly acid, pH 6.2, Phenol red; clear smooth boundary. Lab sample # 87P03267. Horizon slightly more compact.; very few iron stains surface features on sand and gravel; common fine roots; few medium roots



throughout

1Bs1--20 to 43 centimeters (7.9 to 16.9 inches); dark yellowish brown (10YR 3/4) interior very fine sandy loam, yellowish brown (10YR 5/4) interior, dry; weak medium and coarse subangular blocky structure; very friable, nonsticky, nonplastic; few very fine and fine roots throughout; few very fine and fine tubular and many very fine interstitial pores; 55 percent distinct, moist, iron stains on sand and gravel; 1 percent 75 to 250-millimeter Mixed rock fragments and 4 percent 2 to 75-millimeter Mixed rock fragments; strongly acid, pH 5.4, Phenol red; clear wavy boundary. Lab sample # 87P03268. (7.5YR 4/4) 3 cm thick band probably of iron accumulation at base of Bs discontinuous.; many iron stains surface features on sand and gravel; few very fine and fine roots throughout

1Bs2--43 to 63 centimeters (16.9 to 24.8 inches); dark yellowish brown (10YR 3/4) interior very fine sandy loam; 1 percent medium distinct (7.5YR 4/4) and 11 percent medium distinct (10YR 5/4) mottles; weak medium subangular blocky structure; friable, nonsticky, nonplastic; few very fine and fine roots throughout; few very fine and fine tubular and many very fine interstitial pores; 55 percent distinct, moist, iron stains on sand and gravel; strongly acid, pH 5.4, Phenol red; clear irregular boundary. Lab sample # 87P03269. Weakly smeary.; many iron stains surface features on sand and gravel; few very fine and fine roots throughout; common medium distinct 10YR54 mottles; few medium distinct 7.5YR44 mottles

2BC--63 to 81 centimeters (24.8 to 31.9 inches); brown (10YR 4/3) interior gravelly fine sandy loam; 1 percent medium distinct (7.5YR 4/4) and 11 percent medium distinct (10YR 5/4) mottles; weak medium subangular blocky structure; firm, nonsticky, nonplastic; few very fine and fine roots throughout; common very fine and fine vesicular and tubular and many very fine interstitial pores; 15 percent faint, moist, iron stains on sand and gravel; 3 percent 75 to 250-millimeter Mixed rock fragments and 12 percent 2 to 75-millimeter Mixed rock fragments; strongly acid, pH 5.4, Phenol red; clear smooth boundary. Lab sample # 87P03270. Weakly smeary. Thin lenses of loam sandy approximately 1 mm thick.; few iron stains surface features on sand and gravel; few very fine and fine roots throughout; common medium distinct 10YR54 mottles; few medium distinct 7.5YR44 mottles

2Cd1--81 to 105 centimeters (31.9 to 41.3 inches); brown (10YR 5/3) interior gravelly sandy loam; moderate medium platy structure; firm, nonsticky, nonplastic; few very fine vesicular and tubular and common very fine interstitial pores; 5 percent 75 to 250-millimeter Mixed rock fragments and 20 percent 2 to 75-millimeter Mixed rock fragments; moderately acid, pH 5.6, Phenol red; gradual wavy boundary. Lab sample # 87P03271. (10YR 6/3) color of lenses slightly brittle. Most sand grains are clean.

2Cd2--105 to 152 centimeters (41.3 to 59.8 inches); weak red (2.5YR 4/2) interior gravelly sandy loam; weak medium platy structure; firm, nonsticky, nonplastic; few very fine vesicular and tubular and few very fine interstitial pores; 5 percent 75 to 250-millimeter Mixed rock fragments and 12 percent 2 to 75-millimeter Mixed rock fragments; moderately acid, pH 5.6, Phenol red. Lab sample # 87P03272

\*\*\* Primary Characterization Data \*\*\*  
( Essex, New York )

Pedon ID: 87NY031003

Print Date: Jun 14 2016 2:09PM

Sampled as on May 30, 1987:

Potsdam ; Coarse-loamy, mixed, frigid Typic Haplorthod

Revised to correlated: Potsdam ; Coarse-loamy, mixed, superactive, frigid Aquic Haplorthods

SSL - Project CP87NY201 NEW YORK ISCOM TOUR  
- Site ID S1987NY031003 Lat: 44° 14' 45.00" north Long: 74° 2' 14.99" west MLRA: 143  
- Pedon No. 87P0619  
- General Methods 1B1A, 2A1, 2B

United States Department of Agriculture  
Natural Resources Conservation Service  
National Soil Survey Center  
Soil Survey Laboratory  
Lincoln, Nebraska 68508-3866

Layer	Horizon	Orig Hzn	Depth (cm)	Field Label 1	Field Label 2	Field Label 3	Field Texture	Lab Texture
87P03266	Ap1	AP1	0-7					FSL
87P03267	Ap2	AP2	7-20					FSL
87P03268	Bs1	BS1	20-43					LFS
87P03269	Bs2	BS2	43-63					LFS
87P03270	2BC	2BC	63-81					LS
87P03271	2Cd1	2CD1	81-105					LS
87P03272	2Cd2	2CD2	105-152					LS

Pedon Calculations			Result	Units of Measure
Calculation Name				
CEC Activity, CEC7/Clay, Weighted Average			3.06	(NA)
Clay, carbonate free, Weighted Average			2	% wt
Weighted Particles, 0.1-75mm, 75 mm Base			54	% wt
Volume, >2mm, Weighted Average			8	% vol
Clay, total, Weighted Average			2	% wt
LE, Whole Soil, Summed to 1m			1	cm/m

Weighted averages based on control section: 25-100 cm

PSDA & Rock Fragments				-1-	-2-	-3-	-4-	-5-	-6-	-7-	-8-	-9-	-10-	-11-	-12-	-13-	-14-	-15-	-16-	-17-	-18-
				(- - - - - Total - - - - -)					(- - Clay - - -)		(- - - - - Silt - - - - -)			(- - - - - Sand - - - - -)					( Rock Fragments (mm) )		
Lab				Clay	Silt	Sand	Fine	CO <sub>3</sub>	Fine	Coarse	VF	F	M	C	VC	(- - - - - Weight - - - - -)					>2 mm
Text-				<	.002	.05	<	<	.002	.02	.05	.10	.25	.5	1	2	5	20	.1-		wt %
ure				.002	-.05	-2	.0002	.002	-.02	-.05	-.10	-.25	-.50	-1	-2	-5	-20	-75	75		whole
Layer				Depth																	
				(cm)																	
				Horz																	
				Prep																	
					(- - - - - % of <2mm Mineral Soil - - - - -)										(- - - - - % of <75mm - - - - -)						soil
					3A1a1a	3A1a1a	3A1a1a	3A1a1a	3A1a1a		3A1a1a	3A1a1a	3A1a1a	3A1a1a	3A1a1a	3A1a1a	3A1a1a	3B1	3B1	3B1	



87P03266	0-7	Ap1	S	fsl	5.3	22.0	72.7	1.8		9.2	12.8	27.9	25.1	12.8	5.3	1.6	2	3	--	48	5
87P03267	7-20	Ap2	S	fsl	5.0	21.9	73.1	1.7		9.4	12.5	29.6	24.5	11.4	5.5	2.1	3	2	--	46	22
87P03268	20-43	Bs1	S	lfs	3.0	21.2	75.8	1.1		7.8	13.4	29.5	25.9	11.9	5.7	2.8	3	2	--	49	7
87P03269	43-63	Bs2	S	lfs	3.2	23.1	73.7	1.6		7.9	15.2	31.3	23.9	11.0	5.2	2.3	1	1	--	44	2
87P03270	63-81	2BC	S	ls	1.0	25.4	73.6	1.0		12.9	12.5	19.8	24.0	16.0	8.6	5.2	4	6	1	59	15
87P03271	81-105	2Cd1	S	ls	0.8	23.9	75.3	0.8		11.5	12.4	16.7	26.2	18.8	9.1	4.5	6	8	2	65	21
87P03272	105-152	2Cd2	S	ls	0.3	20.2	79.5	0.3		9.1	11.1	16.3	27.6	20.9	10.2	4.5	4	5	1	67	16

\*\*\* Primary Characterization Data \*\*\*

Pedon ID: 87NY031003

( Essex, New York )

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Sampled As : Potsdam

Coarse-loamy, mixed, frigid Typic Haplorthod

USDA-NRCS-NSSC-Soil Survey Laboratory

; Pedon No. 87P0619

Bulk Density & Moisture				-1-	-2-	-3-	-4-	-5-	-6-	-7-	-8-	-9-	-10-	-11-	-12-	-13-
				(Bulk Density)		Cole	(- - - - - Water Content - - - - -)					WRD	Aggst			
				33	Oven	Whole	6	10	33	1500	1500 kPa	Ratio	Whole	Stabl	(- - Ratio/Clay - -)	
				kPa	Dry	Soil	kPa	kPa	kPa	kPa	Moist	AD/OD	Soil	2-0.5mm	CEC7	1500 kPa
Layer	Depth	Horz	Prep	(- - - g cm <sup>-3</sup> - - -)		(- - - - - % of < 2mm - - - - -)							cm <sup>3</sup> cm <sup>-3</sup>	%		
				4A1d	4A1h		4B1c	4B1c	4B1c	3C2a1a	4B2b	3D1	4C1	3F1a1a	8D1	8D1
87P03266	0-7	Ap1	S	1.24	1.25	0.003	26.5	26.5	23.5	9.2		1.018	0.17		3.42	1.74
87P03266	0-7	Ap1	M								9.3					
87P03267	7-20	Ap2	S	1.35	1.38	0.006	29.9	29.9	25.0	8.9		1.021	0.14	65	3.52	1.78
87P03267	7-20	Ap2	M								13.2					
87P03268	20-43	Bs1	S	1.36	1.38	0.005		24.0	18.3	5.7		1.014	0.12	61	2.33	1.90
87P03268	20-43	Bs1	M								9.3					
87P03269	43-63	Bs2	S	1.26	1.31	0.013		25.7	20.5	6.0		1.015	0.10	75	2.53	1.88
87P03269	43-63	Bs2	M								12.1					
87P03270	63-81	2BC	S	1.70	1.71	0.002			14.2	3.9		1.008	0.11	60	5.10	3.90
87P03270	63-81	2BC	M								7.0					
87P03271	81-105	2Cd1	S	1.93	1.93	--			6.3	1.4		1.003	0.08	81		
87P03271	81-105	2Cd1	M								1.5					

87P03272	105-152	2Cd2	S	1.94	1.94	--				4.4	1.4		1.002	0.05	88
87P03272	105-152	2Cd2	M									1.6			

Carbon & Extractions				-1-	-2-	-3-	-4-	-5-	-6-	-7-	-8-	-9-	-10-	-11-	-12-	-13-	-14-	-15-	-16-	-17-	-18-	-19-	
Layer	Depth (cm)	Horz	Prep	(- - - - - Total - - - - -)		Est	OC	C/N	(- - - Dith-Cit Ext - - -)			(- - - - - Ammonium Oxalate Extraction - - - - -)					(- - - Na Pyro-Phosphate - - -)						
				C	N	S	OC	(WB)	Ratio	Fe	Al	Mn	Al+½Fe	ODOE	Fe	Al	Si	Mn	C	Fe	Al	Mn	
				(- - - - - % of <2 mm - - - - -)						(- - - - - % of <2mm - - - - -)										mg kg <sup>-1</sup> (- - - - - % of <2mm - - - - -)			
				6A2d	6B3a			6A1c		6C2b	6G7a	6D2a		8J	6C9a	6G12	6V2	6D5b	6A4a	6C8a	6G10		
87P03266	0-7	Ap1	S	4.56	0.249			4.75	19	1.2	0.8	tr	1.64	0.65	0.94	1.17	0.18			0.7	0.7		
87P03267	7-20	Ap2	S	4.18	0.235			4.39	19	1.2	0.8	tr	1.63	0.63	0.91	1.17	0.18		3.3	0.7	0.7		
87P03268	20-43	Bs1	S	1.54	0.089			1.58	18	0.9	0.7	tr	1.46	0.20	0.55	1.19	0.32		1.8	0.3	0.5		
87P03269	43-63	Bs2	S	1.75				1.70		1.0	0.7	tr	1.50	0.21	0.58	1.21	0.32	100.0	2.0	0.4	0.5		
87P03270	63-81	2BC	S	0.85				0.90		0.6	0.4	--	1.12	0.11	0.35	0.94	0.26		1.3	0.2	0.3		
87P03271	81-105	2Cd1	S	0.14				0.15		0.3	0.1	tr	0.41	0.03	0.13	0.34	0.10		0.8	tr	0.1		
87P03272	105-152	2Cd2	S	0.11				0.09		0.4	0.1	--	0.29	0.15	0.08	0.25	0.07		0.8	tr	0.1		

### \*\*\* Primary Characterization Data \*\*\*

Pedon ID: 87NY031003

( Essex, New York )

Print Date: Jun 14 2016 2:09PM

Sampled As : Potsdam

Coarse-loamy, mixed, frigid Typic Haplorthod

USDA-NRCS-NSSC-Soil Survey Laboratory

; Pedon No. 87P0619

CEC & Bases				-1-	-2-	-3-	-4-	-5-	-6-	-7-	-8-	-9-	-10-	-11-	-12-	-13-	-14-
				(- - - - - NH <sub>4</sub> OAC Extractable Bases - - - - -)									CEC8	CEC7	ECEC	(- - - - - Base - - - - -)	
									Sum	Acid-	Extr	KCl	Sum	NH <sub>4</sub>	Bases	Al	(- Saturation -)
				Ca	Mg	Na	K		Bases	ity	Al	Mn	Cats	OAC	+Al	Sat	Sum
				(- - - - - cmol(+) kg <sup>-1</sup> - - - - -)									(- - - - - cmol(+) kg <sup>-1</sup> - - - - -)			(- - - - - % - - - - -)	
				6N2e	6O2d	6P2b	6Q2b			6H5a	6G9b		5A3a	5A8b	5A3b	5G1	5C3
																	5C1
Layer	Depth (cm)	Horz	Prep														
87P03266	0-7	Ap1	S	8.9	1.9	--	0.3	11.1	20.1				31.2	18.1		36	61
87P03267	7-20	Ap2	S	8.8	2.2	tr	0.3	11.3	20.2				31.5	17.6		36	64
87P03268	20-43	Bs1	S	0.9	0.3	--	tr	1.2	15.0				16.2	7.0		7	17



87P03269	43-63	Bs2	S	0.6	0.2	0.6	0.1	1.5	17.1	0.6		18.6	8.1	2.1	29	8	19
87P03270	63-81	2BC	S	0.3	0.1	0.5	tr	0.9	10.4	0.6		11.3	5.1	1.5	40	8	18
87P03271	81-105	2Cd1	S	0.1	tr	0.5	tr	0.6	3.3			3.9	1.9			15	32
87P03272	105-152	2Cd2	S	0.1	tr	0.6	tr	0.7	2.8	0.2		3.5	1.8	0.9	22	20	39

Salt				-1-	-2-	-3-	-4-	-5-	-6-	-7-	-8-	-9-	-10-	-11-	-12-	-13-	-14-	-15-	-16-	-17-	-18-	-19-	-20-
------	--	--	--	-----	-----	-----	-----	-----	-----	-----	-----	-----	------	------	------	------	------	------	------	------	------	------	------

(----- Water Extracted From Saturated Paste -----) 1:2

	Depth			Ca	Mg	Na	K	CO <sub>3</sub>	HCO <sub>3</sub>	F	Cl	PO <sub>4</sub>	Br	OAC	SO <sub>4</sub>	NO <sub>2</sub>	NO <sub>3</sub>	H <sub>2</sub> O	Total	Elec	Elec	Exch	
Layer	(cm)	Horz	Prep	Ca Mg Na K				CO <sub>3</sub>	HCO <sub>3</sub>	F	Cl	PO <sub>4</sub>	Br	OAC	SO <sub>4</sub>	NO <sub>2</sub>	NO <sub>3</sub>	H <sub>2</sub> O	Salts	Cond	Cond	Na	SAR
				mmol(+) L <sup>-1</sup>															%		dS m <sup>-1</sup>		%

87P03266	0-7	Ap1	S																				--
87P03267	7-20	Ap2	S																				--
87P03268	20-43	Bs1	S																				--
87P03269	43-63	Bs2	S																				7
87P03270	63-81	2BC	S																				10
87P03271	81-105	2Cd1	S																				26
87P03272	105-152	2Cd2	S																				33

### \*\*\* Primary Characterization Data \*\*\*

Pedon ID: 87NY031003  
 Sampled As : Potsdam  
 USDA-NRCS-NSSC-Soil Survey Laboratory

( Essex, New York )  
 Coarse-loamy, mixed, frigid Typic Haplorthod  
 ; Pedon No. 87P0619

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pH & Carbonates				-1-	-2-	-3-	-4-	-5-	-6-	-7-	-8-	-9-	-10-	-11-
				pH				Carbonate				Gypsum		
				CaCl <sub>2</sub>				As CaCO <sub>3</sub>				As CaSO <sub>4</sub> *2H <sub>2</sub> O Resist		
				0.01M	H <sub>2</sub> O	Sat		<2mm	<20mm	<2mm	<20mm	ohms		
Layer	Depth	Horz	Prep	KCl	1:2	1:1	Paste	Oxid	NaF	%				cm <sup>-1</sup>
	(cm)			4C1a2a	3C1a2a	4C1a2a			4C1a1a1					8E1

87P03266	0-7	Ap1	S	5.2	5.5	5.8	11.1	2040
87P03267	7-20	Ap2	S	5.3	5.6	6.0	11.2	
87P03268	20-43	Bs1	S	4.9	5.0	5.7	11.3	
87P03269	43-63	Bs2	S	4.7	4.9	5.5	11.3	
87P03270	63-81	2BC	S	4.8	5.0	5.5	11.2	
87P03271	81-105	2Cd1	S	4.8	5.1	5.6	10.6	
87P03272	105-152	2Cd2	S	4.7	5.0	5.5	10.4	

Phosphorous				-1-	-2-	-3-	-4-	-5-	-6-	-7-	-8-	-9-	-10-	-11-	-12-	
				(- ----- Phosphorous -----)												KCl
				Melanic	NZ	Acid	Anion Exch	Resin	Bray	Bray	Olsen	H <sub>2</sub> O	Citric	Mehlich	Extr	
				Index		Oxal	Available	Capacity	1	2			Acid	III	NO <sub>3</sub>	
Layer	Depth (cm)	Horz	Prep	%	(- ----- mg kg <sup>-1</sup> -----)											
				6S4												
87P03266	0-7	Ap1	S	79												
87P03267	7-20	Ap2	S	82												
87P03268	20-43	Bs1	S	82												
87P03269	43-63	Bs2	S	80												
87P03270	63-81	2BC	S	65												
87P03271	81-105	2Cd1	S	27												
87P03272	105-152	2Cd2	S	29												

\*\*\* Primary Characterization Data \*\*\*

Pedon ID: 87NY031003

Sampled As : Potsdam

USDA-NRCS-NSSC-Soil Survey Laboratory

Clay Mineralogy (<.002 mm)	-1-	-2-	-3-	-4-	-5-	-6-	-7-	-8-	-9-	-10-	-11-	-12-	-13-	-14-	-15-	-16-	-17-	-18-
	X-Ray				Thermal				Elemental				EGME				Inter	
										SiO <sub>2</sub>	Al <sub>2</sub> O <sub>3</sub>	Fe <sub>2</sub> O <sub>3</sub>	MgO	CaO	K <sub>2</sub> O	Na <sub>2</sub> O	Retn	pret



Layer	Depth (cm)	Horz	Fract ion	7A2i (----- peak size -----)	(----- % -----)	7C3 (----- % -----)	tion mg g <sup>-1</sup>
87P03266	0.0-7.0	Ap1	tcl	MI 1		6.9	0.6
87P03268	20.0-43.0	Bs1	tcl	MI 1		4.7	0.4
87P03271	81.0-105.0	2Cd1	tcl	MI 1		3.7	1.4

#### FRACTION INTERPRETATION:

tcl - Total Clay <0.002 mm

#### MINERAL INTERPRETATION:

MI Mica

#### RELATIVE PEAK SIZE:

5 Very Large      4 Large      3 Medium      2 Small      1 Very Small      6 No Peaks

## PEDON DESCRIPTION

**sitetext.textsubcat**

**Print Date:** Jun 14 2016

**Description Date:** Jun 1 1987

**Describer:** John Kimble, Terry Cook, Brian Grisi

**Site ID:** S1987NY031005

**Site Note:**

**Pedon ID:** 87NY031005

**Pedon Note:** Sand grains viewed with 10x and 20x lens. 5-25% of pores and as bridges have (5YR 4/3, 3/3) gelatinous material in horizons from 15-70 cm.; water table was observed in June

**Lab Source ID:** SSL

**Lab Pedon #:** 87P0621

**User Transect ID:**

**Country:**

**State:** New York

**County:** Essex

**MLRA:** 143 -- Northeastern Mountains

**Soil Survey Area:**

**Map Unit:**

**Quad Name:**

**Std Latitude:** 44.3997231

**Std Longitude:** -73.8866653

**Soil Name as Described/Sampled:** Worden

**Classification:** Coarse-loamy, mixed, frigid Aquic Haplohumod

**Soil Name as Correlated:** *AMPERSAND*

**Classification:** Coarse-loamy, mixed, frigid Andic Haplohumods

**Pedon Type:**

**Pedon Purpose:** full pedon description

**Taxon Kind:** series

**Associated Soils:**

**Physiographic Division:**

**Physiographic Province:**

**Physiographic Section:**

**State Physiographic Area:**

**Local Physiographic Area:**

**Geomorphic Setting:** on backslope of nose slope of upland  
on backslope of nose slope of hillside or mountainside

**Upslope Shape:** concave

**Cross Slope Shape:**

**Particle Size Control Section:** 25 to 100 cm.

**Description origin:** Converted from SSL-CMS data

**Diagnostic Features:** spodic horizon 20 to 70 cm.

**Primary Earth Cover:** Tree cover

**Secondary Earth Cover:** Hardwoods

**Vegetation:** balsam fir, red spruce, yellow birch

**Parent Material:**

**Bedrock Kind:**

**Bedrock Depth:**

**Bedrock Hardness:**

**Bedrock Fracture Interval:**

**Surface Fragments:** 1.5 percent

**Description database:** KSSL

**Cont. Site ID:** S1987NY031005

**Pedon ID:** 87NY031005

Slope (%)	Elevation (meters)	Aspect (deg)	MAAT (C)	MSAT (C)	MWAT (C)	MAP (mm)	Frost-Free Days	Drainage Class	Slope Length (meters)	Upslope Length (meters)
-----------	--------------------	--------------	----------	----------	----------	----------	-----------------	----------------	-----------------------	-------------------------



25.0	777.0	0	3.0	14.0	12.0	110		somewhat poorly		
------	-------	---	-----	------	------	-----	--	-----------------	--	--

Oi--0 to 4 centimeters (0.0 to 1.6 inches); Error; common very fine roots throughout; very strongly acid, pH 4.6, Unspecified; abrupt smooth boundary. common very fine roots throughout

Oa--4 to 19 centimeters (1.6 to 7.5 inches); black (5Y 2/1) interior Error; moderate fine and medium granular structure; very friable; common medium roots throughout and many fine roots; very strongly acid, pH 4.6, Unspecified; abrupt smooth boundary. Lab sample # 87P03281. many fine roots; common medium roots throughout

BE--19 to 24 centimeters (7.5 to 9.4 inches); dark reddish brown (5YR 3/4) interior and reddish gray (5YR 5/2) interior and dark reddish brown (5YR 3/2) interior sandy loam; weak fine and medium subangular blocky structure; friable, nonsticky, nonplastic; common medium roots throughout and common fine roots; many very fine and fine interstitial pores; 2 percent faint , moist, iron stains on sand and gravel and 15 percent prominent , moist, iron stains on sand and gravel and 55 percent faint , moist, iron stains on sand and gravel; 5 percent 2 to 75-millimeter Mixed rock fragments; very strongly acid, pH 5.0, Unspecified; abrupt broken boundary. Lab sample # 87P03282. (5YR 3/2) is the E color. Moderately smeary.; few iron stains surface features on sand and gravel; very few iron stains surface features on sand and gravel; many iron stains surface features on sand and gravel; common fine roots; common medium roots throughout

Bh1--24 to 37 centimeters (9.4 to 14.6 inches); 40 percent dark reddish brown (5YR 3/4) interior and 40 percent dark reddish brown (5YR 3/2) interior and 20 percent dark reddish brown (5YR 2/2) interior sandy loam; weak fine subangular blocky, and weak fine and medium granular structure; friable, nonsticky, nonplastic; common medium roots throughout and common fine roots; common very fine and fine interstitial pores; 37 percent prominent , moist, iron stains on sand and gravel and 55 percent distinct , moist, iron stains on sand and gravel; 5 percent 2 to 75-millimeter Mixed rock fragments; very strongly acid, pH 5.0, Phenol red; clear wavy boundary. Lab sample # 87P03283. Moderately smeary.; many iron stains surface features on sand and gravel; common iron stains surface features on sand and gravel; common fine roots; common medium roots throughout

Bh2--37 to 50 centimeters (14.6 to 19.7 inches); 30 percent very dusky red (2.5YR 2/2) interior and 70 percent dusky red (2.5YR 3/2) interior sandy loam; weak fine and medium subangular blocky, and moderate fine and medium granular structure; friable, nonsticky, nonplastic; common medium roots throughout and common fine roots; common very fine and fine interstitial pores; 37 percent prominent , moist, iron stains on sand and gravel and 55 percent distinct , moist, iron stains on sand and gravel; 5 percent 2 to 75-millimeter Mixed rock fragments; strongly acid, pH 5.2, Phenol red; clear wavy boundary. Lab sample # 87P03284. Moderately smeary.; many iron stains surface features on sand and gravel; common iron stains surface features on sand and gravel; common fine roots; common medium roots throughout

Bhs--50 to 74 centimeters (19.7 to 29.1 inches); 40 percent dark reddish brown (5YR 3/2) interior and 40 percent dark reddish brown (5YR 3/3) interior and 20 percent dark reddish brown (5YR 2/2) interior gravelly sandy loam; weak fine and medium subangular blocky, and weak fine and medium granular structure; friable, nonsticky, nonplastic; common very fine roots and few fine roots throughout; common fine interstitial pores; 37 percent prominent , moist, iron stains on sand and gravel and 55 percent distinct , moist, iron stains on sand and gravel; 25 percent 2 to 75-millimeter Mixed rock fragments; strongly acid, pH 5.4, Phenol red. Lab sample # 87P03285. Saturated with water. Water moving through horizon and pouring in pit. Requires contain building. Friable but peds pop and are brittle. Moderately smeary.; many iron stains surface features on sand

and gravel; common iron stains surface features on sand and gravel; common very fine roots; few fine roots throughout

Cd--74 to 94 centimeters (29.1 to 37.0 inches); .

\*\*\* Primary Characterization Data \*\*\*  
( Essex, New York )

Pedon ID: 87NY031005

Print Date: Jun 14 2016 2:09PM

Sampled as on Jun 1, 1987: Worden ; Coarse-loamy, mixed, frigid Aquic Haplohumod  
Revised to correlated: Worden ; Coarse-loamy, mixed, frigid Andic Haplohumods

SSL - Project CP87NY201 NEW YORK ISCOM TOUR  
- Site ID S1987NY031005 Lat: 44° 23' 59.00" north Long: 73° 53' 12.00" west MLRA: 143  
- Pedon No. 87P0621  
- General Methods 1B1A, 2A1, 2B

United States Department of Agriculture  
Natural Resources Conservation Service  
National Soil Survey Center  
Soil Survey Laboratory  
Lincoln, Nebraska 68508-3866

Layer	Horizon	Orig Hzn	Depth (cm)	Field Label 1	Field Label 2	Field Label 3	Field Texture	Lab Texture
87P03281	Oa	OA	0-15					
87P03282	BE	BE	15-20					SL
87P03283	Bh1	BH1	20-33					SL
87P03284	Bh2	BH2	33-46					SL
87P03285	Bhs	BHS	46-70					LCOS

PSDA & Rock Fragments				-1-	-2-	-3-	-4-	-5-	-6-	-7-	-8-	-9-	-10-	-11-	-12-	-13-	-14-	-15-	-16-	-17-	-18-
Layer	Depth	Horz	Prep	(- - - - - Total - - - - -)				(- - Clay - - -)		(- - - - - Silt - - - - -)			(- - - - - Sand - - - - -)				( Rock Fragments (mm) )				
				Lab	Clay	Silt	Sand	Fine	CO <sub>3</sub>	Fine	Coarse	VF	F	M	C	VC	(- - - - - Weight - - - - -)				>2 mm
				Text-	<	.002	.05	<	<	.002	.02	.05	.10	.25	.5	1	2	5	20	.1-	wt %
				ure	.002	-.05	-2	.0002	.002	-.02	-.05	-.10	-.25	-.50	-1	-2	-5	-20	-75	75	whole
Layer	(cm)	Horz	Prep	(- - - - - % of <2mm Mineral Soil - - - - -)													(- - - - - % of <75mm - - - - -)				soil
				3A1a1a	3A1a1a	3A1a1a	3A1a1a			3A1a1a	3A1a1a	3A1a1a	3A1a1a	3A1a1a	3A1a1a	3A1a1a	3B1	3B1	3B1		
87P03281	0-15	Oa	S														3	--	--		



87P03282	15-20	BE	S	sl	4.6	27.1	68.3	17.3	9.8	12.7	19.0	18.2	13.2	5.2	7	6	--	61	13
87P03283	20-33	Bh1	S	sl	1.9	26.2	71.9	13.9	12.3	18.1	18.8	15.4	12.9	6.7	5	14	--	63	19
87P03284	33-46	Bh2	S	sl	2.2	27.0	70.8	13.0	14.0	14.0	16.4	15.9	14.8	9.7	7	11	1	65	19
87P03285	46-70	Bhs	S	lcos	1.8	22.4	75.8	10.8	11.6	11.7	15.9	17.8	18.8	11.6	8	24	34	88	66

Bulk Density & Moisture				-1-	-2-	-3-	-4-	-5-	-6-	-7-	-8-	-9-	-10-	-11-	-12-	-13-						
Layer	Depth	Horz	Prep	(Bulk Density)		Cole	(- - - - - Water Content - - - - -)						WRD	Aggst								
				33	Oven	Whole	6	10	33	1500	1500	kPa Ratio	Whole	Stabl	(- - Ratio/Clay - -)							
				kPa	Dry	Soil	kPa	kPa	kPa	kPa	Moist	AD/OD	Soil	2-0.5mm	CEC7	1500 kPa						
				(- - - g cm <sup>-3</sup> - - -)	(- - - - - % of < 2mm - - - - -)											cm <sup>3</sup> cm <sup>-3</sup>	%					
	(cm)			4A1d	4A1h			4B1c	4B1c	3C2a1a	4B2b	3D1	4C1	3F1a1a	8D1	8D1						
87P03281	0-15	Oa	S	0.26	0.43				205.5	96.3		1.105										
87P03281	0-15	Oa	M								98.6											
87P03282	15-20	BE	S							8.9		1.017		83	4.28	1.93						
87P03282	15-20	BE	M								18.7											
87P03283	20-33	Bh1	S	0.70	0.86	0.066		65.3	64.6	22.0		1.063	0.08		29.84	11.58						
87P03283	20-33	Bh1	M								52.9											
87P03284	33-46	Bh2	S							24.4		1.051			26.59	11.09						
87P03284	33-46	Bh2	M								49.6											
87P03285	46-70	Bhs	S	0.95	1.12	0.032		53.0	45.5	19.5		1.044	0.05		26.94	10.83						
87P03285	46-70	Bhs	M								36.7											
Carbon & Extractions				-1-	-2-	-3-	-4-	-5-	-6-	-7-	-8-	-9-	-10-	-11-	-12-	-13-	-14-	-15-	-16-	-17-	-18-	-19-
Depth				(- - - - - Total - - - - -)			Est	OC	C/N	(- - - Dith-Cit Ext - - -)			(- - - - - Ammonium Oxalate Extraction - - - - -)					(- - - Na Pyro-Phosphate - - -)				
				C	N	S	OC	(WB)	Ratio	Fe	Al	Mn	Al+½Fe	ODOE	Fe	Al	Si	Mn	C	Fe	Al	Mn

Layer	(cm)	Horz	Prep	(- - - - - % of <2 mm - - - - -)				(- - - - - % of < 2mm - - - - -)								mg kg <sup>-1</sup> (- - - - - % of < 2mm - - - - -)		
				6A2d	6B3a		6A1c	6C2b	6G7a	6D2a		8J	6C9a	6G12	6V2	6A4a	6C8a	6G10
87P03281	0-15	Oa	S	44.85	2.203		55.21 25	0.3	1.3	--		3.84	0.14	1.29		18.3	0.2	1.5
87P03282	15-20	BE	S	3.81	0.163		3.89 24	1.0	0.5	--	0.86	0.93	0.62	0.55	0.01	3.6	0.7	0.6
87P03283	20-33	Bh1	S	9.65	0.373		8.81 24	1.7	2.3	--	3.31	2.84	1.18	2.72	0.40	9.0	1.2	1.7
87P03284	33-46	Bh2	S	10.19			8.60	1.1	2.4	--	3.25	2.63	0.63	2.93	0.44	8.7	0.6	1.8
87P03285	46-70	Bhs	S	8.14			8.11	0.7	2.2	--	0.62	2.36	0.42	0.41	2.82	7.8	0.4	1.8

\*\*\* Primary Characterization Data \*\*\*

Pedon ID: 87NY031005

( Essex, New York )

Print Date: Jun 14 2016 2:09PM

Sampled As : Worden

Coarse-loamy, mixed, frigid Aquic Haplohumod

USDA-NRCS-NSSC-Soil Survey Laboratory

; Pedon No. 87P0621

CEC & Bases				-1-	-2-	-3-	-4-	-5-	-6-	-7-	-8-	-9-	-10-	-11-	-12-	-13-	-14-
				(- - - - - NH <sub>4</sub> OAC Extractable Bases - - - - -)								CEC8	CEC7	ECEC	(- - - - Base - - - -)		
								Sum	Acid-	Extr	KCl	Sum	NH <sub>4</sub>	Bases	Al	(- Saturation -)	
Layer	Depth (cm)	Horz	Prep	Ca	Mg	Na	K	Bases	ity	Al	Mn	Cats	OAC	+Al	Sat	Sum	NH <sub>4</sub> OAC
				(- - - - - cmol(+) kg <sup>-1</sup> - - - - -)								mg kg <sup>-1</sup> (- - - - cmol(+) kg <sup>-1</sup> - - -)				(- - - - - % - - - - -)	
				6N2e	6O2d	6P2b	6Q2b		6H5a	6G9b		5A3a	5A8b	5A3b	5G1	5C3	5C1
87P03281	0-15	Oa	S	17.4	2.0	0.6	0.5		197.8	5.7				168.1			
87P03282	15-20	BE	S	1.6	0.1	0.1	tr	1.8	30.0	5.9		31.8	19.7	7.7	77	6	9
87P03283	20-33	Bh1	S	3.5	0.2	0.2	tr	3.9	71.5	8.4		75.4	56.7	12.3	68	5	7
87P03284	33-46	Bh2	S	2.8	0.1	0.2	tr	3.1	72.2	8.2		75.3	58.5	11.3	73	4	5
87P03285	46-70	Bhs	S	2.4	0.1	0.2	--	2.7	66.5	6.3		69.2	48.5	9.0	70	4	6

Salt				-1-	-2-	-3-	-4-	-5-	-6-	-7-	-8-	-9-	-10-	-11-	-12-	-13-	-14-	-15-	-16-	-17-	-18-	-19-	-20-
				(- - - - - Water Extracted From Saturated Paste - - - - -) 1:2																			
				Ca	Mg	Na	K	CO <sub>3</sub>	HCO <sub>3</sub>	F	Cl	PO <sub>4</sub>	Br	OAC	SO <sub>4</sub>	NO <sub>2</sub>	NO <sub>3</sub>	H <sub>2</sub> O	Salts	Cond	Cond	Na	SAR
Layer	Depth (cm)	Horz	Prep	(- - - - - mmol(+) L <sup>-1</sup> - - - - -)				(- - - - - mmol(-) L <sup>-1</sup> - - - - -)								(- - - - % - - - -)				(- - dS m <sup>-1</sup> - -)			

87P03282	15-20	BE	S	1
87P03283	20-33	Bh1	S	tr
87P03284	33-46	Bh2	S	tr
87P03285	46-70	Bhs	S	tr

\*\*\* Primary Characterization Data \*\*\*

Sampled As : Worden

Print Date: Jun 14 2016 2:09PM

USDA-NRCS-NSSC-Soil Survey Laboratory

; Pedon No. 87P0621

Phosphorous				-1-	-2-	-3-	-4-	-5-	-6-	-7-	-8-	-9-	-10-	-11-	-12-
				(- ----- Phosphorous -----) KCl											
				Melanic NZ	Acid	Anion Exch	Resin Bray	Bray	Olsen	H <sub>2</sub> O	Citric	Mehlich	Extr		
Depth				Index	Oxal	Available	Capacity 1	2					Acid	III	NO <sub>3</sub>
Layer	(cm)	Horz	Prep	%	(- ----- mg kg <sup>-1</sup> -----)										
				6S4											



87P03281	0-15	Oa	S	78
87P03282	15-20	BE	S	75
87P03283	20-33	Bh1	S	97
87P03284	33-46	Bh2	S	94
87P03285	46-70	Bhs	S	99

\*\*\* Primary Characterization Data \*\*\*

Pedon ID: 87NY031005

( Essex, New York )

Print Date: Jun 14 2016 2:09PM

Sampled As : Worden

Coarse-loamy, mixed, frigid Aquic Haplohumod

USDA-NRCS-NSSC-Soil Survey Laboratory

; Pedon No. 87P0621

Clay Mineralogy (<.002 mm)				-1-	-2-	-3-	-4-	-5-	-6-	-7-	-8-	-9-	-10-	-11-	-12-	-13-	-14-	-15-	-16-	-17-	-18-
				X-Ray				Thermal				Elemental				EGME				Inter	
				7A2i								7C3								tion	
Layer	Depth (cm)	Horz	Fract ion	(----- peak size -----)				(----- % -----)				(----- % -----)				mg g <sup>-1</sup>					
87P03282	15.0-20.0	BE	tcl	VR 1	VM 1	KK 1	MI 1									7.1		0.6			
87P03285	46.0-70.0	Bhs	tcl	NX 6												2.3		0.4			

FRACTION INTERPRETATION:

tcl - Total Clay <0.002 mm

MINERAL INTERPRETATION:

KK Kaolinite      MI Mica      NX Non-Crystalline      VM Vermiculite-Mica      VR Vermiculite

RELATIVE PEAK SIZE:      5 Very Large      4 Large      3 Medium      2 Small      1 Very Small      6 No Peaks

## PEDON DESCRIPTION

**sitetext.textsubcat**

**Print Date:** Jun 14 2016

**Description Date:** Oct 27 2004

**Describer:** Gerald Smith, Ted Trevail

**Site ID:** S2004NY031004

**Site Note:**

**Pedon ID:** S04NY031004

**Pedon Note:**

**Lab Source ID:** SSL

**Lab Pedon #:** 09N0532

**User Transect ID:**

**Soil Name as Described/Sampled:** Esther

**Classification:** Medial, amorphic Aquandic Haplocryod

**Soil Name as Correlated:** Esther

**Classification:** Medial, amorphic Aquandic Humicryods

**Pedon Type:** OSD pedon

**Pedon Purpose:** full pedon description

**Taxon Kind:** series

**Associated Soils:** Couchsachraga, Ricker, Santanoni, Skylight, Wallface

**Physiographic Division:**

**Physiographic Province:**

**Physiographic Section:**

**State Physiographic Area:**

**Local Physiographic Area:**

**Geomorphic Setting:** on backslope of back-slope or foot-slope positions  
mountain slope

on backslope of adirondack mountains

**Upslope Shape:** convex

**Cross Slope Shape:** convex

**Country:** United States

**State:** New York

**County:** Essex

**MLRA:**

**Soil Survey Area:** NY031 -- Essex County, New York

**Map Unit:**

**Quad Name:**

**Std Latitude:** 44.3849983

**Std Longitude:** -73.9024963

**Primary Earth Cover:** Tree cover

**Secondary Earth Cover:** Intermixed conifers and hardwoods

**Vegetation:** balsam fir, Dryopteris, Moss, yellow birch

**Parent Material:** loamy lodgment till derived from gneiss

**Bedrock Kind:**

**Bedrock Depth:**

**Bedrock Hardness:**

**Bedrock Fracture Interval:**

**Particle Size Control Section:** 25 to 94 cm.

**Description origin:** NASIS

**Diagnostic Features:** andic soil properties to cm.  
albic horizon 20 to 25 cm.  
spodic horizon 25 to 71 cm.  
densic contact 84 to 183 cm.

**Surface Fragments:** 2.4 percent indurated Gneiss fragments

**Description database:** KSSL

Top Depth (cm)	Bottom Depth (cm)	Restriction Kind	Restriction Hardness
84	183	densic material	

**Cont. Site ID:** S2004NY031004

**Pedon ID:** S04NY031004

Slope (%)	Elevation (meters)	Aspect (deg)	MAAT (C)	MSAT (C)	MWAT (C)	MAP (mm)	Frost-Free Days	Drainage Class	Slope Length (meters)	Upslope Length (meters)
33.0	991.0	340	1.7			1,397	90	moderately well		

Oi--0 to 3 centimeters (0.0 to 1.2 inches); very dark brown (7.5YR 2.5/2) rubbed slightly decomposed plant material; weak medium granular structure; very friable; many very fine roots throughout and many fine roots throughout; extremely acid, pH 4.0, Phenol red; clear smooth boundary. Lab sample # 09N02311

Oe--3 to 10 centimeters (1.2 to 3.9 inches); black (7.5YR 2.5/1) rubbed moderately decomposed plant material; weak fine granular structure; very friable; many very fine roots throughout and common medium roots throughout and many fine roots throughout; extremely acid, pH 4.0, Phenol red; clear wavy boundary. Lab sample # 09N02312

Oa--10 to 20 centimeters (3.9 to 7.9 inches); black (N 2.5/0) rubbed highly decomposed plant material; weak medium granular, and weak fine granular structure; very friable; common medium roots throughout and common fine roots throughout and few coarse roots throughout; extremely acid, pH 4.0, Phenol red; abrupt wavy boundary. Lab sample # 09N02313



E--20 to 25 centimeters (7.9 to 9.8 inches); gray (5YR 5/1) broken face fine sandy loam; weak fine subangular blocky, and weak medium subangular blocky structure; very friable; common medium roots throughout and common fine roots throughout; 5 percent subrounded unspecified fragments; very strongly acid, pH 4.8, Phenol red; abrupt wavy boundary. Lab sample # 09N02314

Bhs1--25 to 56 centimeters (9.8 to 22.0 inches); dusky red (2.5YR 3/2) broken face fine sandy loam; weak coarse subangular blocky, and weak medium subangular blocky structure; friable; few medium roots throughout and common fine roots throughout; 3 percent subrounded unspecified fragments and 10 percent subrounded unspecified fragments; very strongly acid, pH 5.0, Phenol red; moderately smeary; clear wavy boundary. Lab sample # 09N02315

Bhs2--56 to 71 centimeters (22.0 to 28.0 inches); dark reddish brown (2.5YR 3/3) broken face gravelly fine sandy loam; weak coarse subangular blocky, and weak medium subangular blocky structure; friable; few fine roots throughout; 5 percent subrounded unspecified fragments and 15 percent subrounded unspecified fragments; very strongly acid, pH 5.0, Phenol red; moderately smeary; clear wavy boundary. Lab sample # 09N02316

BC--71 to 84 centimeters (28.0 to 33.1 inches); brown (10YR 4/3) broken face gravelly sandy loam; thick platy, and structureless massive, and medium platy; very firm; brittle; 1 percent fine distinct 7.5YR 5/1), moist, iron depletions and 5 percent medium prominent 2.5YR 3/6), moist, masses of oxidized iron and 5 percent fine prominent 2.5YR 3/6), moist, masses of oxidized iron; 2 percent subrounded unspecified fragments and 20 percent subrounded unspecified fragments; strongly acid, pH 5.2, Phenol red; clear wavy boundary. Lab sample # 09N02317

Cd--84 to 183 centimeters (33.1 to 72.0 inches); olive brown (2.5Y 4/3) broken face gravelly loamy sand; structureless massive, and medium platy, and thick platy; very firm; brittle; 5 percent medium prominent 2.5YR 3/4), moist, masses of oxidized iron and 5 percent coarse prominent 2.5YR 3/4), moist, masses of oxidized iron; 1 percent subrounded unspecified fragments and 21 percent subrounded unspecified fragments; strongly acid, pH 5.2, Phenol red. Lab sample # 09N02318

\*\*\* Primary Characterization Data \*\*\*  
( Essex, New York )

Pedon ID: S04NY031004

Print Date: Jun 14 2016 2:09PM

Sampled as on Oct 27, 2004:  
Revised to correlated:

Esther ; Medial, amorphic Aquandic Haplocryod  
Esther ; Medial, amorphic Aquandic Humicryods

SSL - Project C2009USNY072 Cortland & Fulton Co.  
- Site ID S2004NY031004 Lat: 44° 23' 5.99" north Long: 73° 54' 8.99" west  
- Pedon No. 09N0532  
- General Methods 1B1A, 2A1, 2B

United States Department of Agriculture  
Natural Resources Conservation Service  
National Soil Survey Center  
Kellogg Soil Survey Laboratory  
Lincoln, Nebraska 68508-3866

Layer	Horizon	Orig Hzn	Depth (cm)	Field Label 1	Field Label 2	Field Label 3	Field Texture	Lab Texture
-------	---------	----------	------------	---------------	---------------	---------------	---------------	-------------

09N02311	Oi	Oi	0-3	S04NY031004-1	
09N02312	Oe	Oe	3-10	S04NY031004-2	
09N02313	Oa	Oa	10-20	S04NY031004-3	
09N02314	E	E	20-25	S04NY031004-4	LS
09N02315	Bhs1	Bhs1	25-56	S04NY031004-5	LCOS
09N02316	Bhs2	Bhs2	56-71	S04NY031004-6	LCOS
09N02317	BC	BC	71-84	S04NY031004-7	LS
09N02318	Cd	Cd	84-183	S04NY031004-8	LS

				Pedon Calculations																	
Calculation Name								Result		Units of Measure											
Weighted Particles, 0.1-75mm, 75 mm Base								80		% wt											
Volume, >2mm, Weighted Average								20		% vol											
Clay, total, Weighted Average								1		% wt											
Clay, carbonate free, Weighted Average								1		% wt											
CEC Activity, CEC7/Clay, Weighted Average, CECd, Set 1								25.72		(NA)											
Weighted averages based on control section: 25-94 cm																					
PSDA & Rock Fragments				-1-	-2-	-3-	-4-	-5-	-6-	-7-	-8-	-9-	-10-	-11-	-12-	-13-	-14-	-15-	-16-	-17-	-18-
				(- - - - - Total - - - - -)				(- - Clay - - -)		(- - - - - Silt - - - - -)		(- - - - - Sand - - - - -)					( Rock Fragments (mm) )				
Lab				Clay	Silt	Sand	Fine	CO <sub>3</sub>	Fine	Coarse	VF	F	M	C	VC	(- - - - - Weight - - - - -)					>2 mm
Text-				<	.002	.05	<	<	.002	.02	.05	.10	.25	.5	1	2	5	20	.1-	wt %	
Depth				.002	-.05	-.2	.0002	.002	-.02	-.05	-.10	-.25	-.50	-1	-2	-5	-20	-75	75	whole	
Layer	(cm)	Horz	Prep	(- - - - - % of <2mm Mineral Soil - - - - -)										(- - - - - % of <75mm - - - - -)					soil		
				3A1a1a					3A1a1a			3A1a1a		3A1a1a	3A1a1a	3A1a1a	3A1a1a				
09N02311	0-3	Oi	S													--	--	--	--	--	
09N02312	3-10	Oe	S													--	--	--	--	--	
09N02313	10-20	Oa	S													--	--	--	--	--	
09N02314	20-25	E	S	ls	2.1	21.2	76.7		11.9	9.3	11.4	22.7	22.2	12.9	7.5	4	3	--	68	7	
09N02315	25-56	Bhs1	S	lcos	0.9	13.7	85.4		5.2	8.5	11.6	19.8	24.4	19.6	10.0	7	12	19	84	38	
09N02316	56-71	Bhs2	S	lcos	1.8	12.9	85.3		5.5	7.4	10.6	19.6	23.4	19.3	12.4	9	13	5	82	27	
09N02317	71-84	BC	S	ls	1.4	21.5	77.1		9.7	11.8	12.4	21.0	22.0	13.7	8.0	10	15	3	75	28	

09N02318 84-183 Cd S ls 1.9 21.4 76.7 10.7 10.7 11.9 26.3 16.3 14.8 7.4 7 8 6 72 21

\*\*\* Primary Characterization Data \*\*\*

Pedon ID: S04NY031004

( Essex, New York )

Print Date: Jun 14 2016 2:09PM

Sampled As : Esther

Medial, amorphpic Aquandic Haplocryod

USDA-NRCS-NSSC-Soil Survey Laboratory

; Pedon No. 09N0532

Bulk Density & Moisture				-1-	-2-	-3-	-4-	-5-	-6-	-7-	-8-	-9-	-10-	-11-	-12-	-13-
				(Bulk Density)		Cole	(- - - - - Water Content - - - - -)						WRD	Aggst		
				33	Oven	Whole	6	10	33	1500	1500 kPa	Ratio	Whole	Stabl	(- - Ratio/Clay - -)	
				kPa	Dry	Soil	kPa	kPa	kPa	kPa	Moist	AD/OD	Soil	2-0.5mm	CEC7	1500 kPa
Layer	Depth	Horz	Prep	(- - - g cm <sup>-3</sup> - - -)			(- - - - - % of < 2mm - - - - -)						cm <sup>3</sup> cm <sup>-3</sup> %			
										3C2a1a	3D1					
09N02311	0-3	Oi	S							128.8	1.089					
09N02312	3-10	Oe	S							127.0	1.095					
09N02313	10-20	Oa	S							110.2	1.078					
09N02314	20-25	E	S	1.29							6.8	1.008			4.90	3.24
09N02315	25-56	Bhs1	S	0.96							18.1	1.040			44.67	20.11
09N02316	56-71	Bhs2	S	1.04							15.9	1.035			17.00	8.83
09N02317	71-84	BC	S							5.4	1.015			7.93	3.86	
09N02318	84-183	Cd	S							4.4	1.012			3.21	2.32	

Carbon & Extractions				-1-	-2-	-3-	-4-	-5-	-6-	-7-	-8-	-9-	-10-	-11-	-12-	-13-	-14-	-15-	-16-	-17-	-18-	-19-			
				(- - - - - Total - - - - -)			Est	OC	C/N	(- - - Dith-Cit Ext - - -)			(- - - - - Ammonium Oxalate Extraction - - - - -)					(- - - Na Pyro-Phosphate - - -)							
				C	N	S	OC	(WB)	Ratio	Fe	Al	Mn	Al+½Fe	ODOE	Fe	Al	Si	Mn	C	Fe	Al	Mn			
Layer	Depth	Horz	Prep	(- - - - - % of <2 mm - - - - -)						(- - - - - % of < 2mm - - - - -)						mg kg <sup>-1</sup> (- - - - - % of < 2mm - - - - -)									
				4H2a	4H2a	4H2a				4G1	4G1	4G1	4G2	4G2	4G2	4G2	4G2								
09N02311	0-3	Oi	S	52.93	2.81	0.23	52.9		19																
09N02312	3-10	Oe	S	50.99	2.69	0.25	51.0		19																

09N02313	10-20	Oa	S	35.31	1.84	0.16	35.3	19										
09N02314	20-25	E	S	2.64	0.08	tr	2.6	34	0.3	0.3	--	0.33	0.55	0.18	0.24	tr	--	
09N02315	25-56	Bhs1	S	6.82	0.20	0.03	6.8	35	1.6	1.6	--	2.02	1.38	1.21	1.41	0.07	10.9	
09N02316	56-71	Bhs2	S	5.51	0.17	0.02	5.5	32	0.6	1.6	--	1.82	0.96	0.50	1.57	0.14	15.1	
09N02317	71-84	BC	S	1.62	0.05	tr	1.6	31	0.3	1.1	--	1.04	0.33	0.18	0.95	0.22	35.3	
09N02318	84-183	Cd	S	1.10	0.01	tr	1.1	120	0.3	0.8	--	0.88	0.16	0.14	0.82	0.24	39.3	

\*\*\* Primary Characterization Data \*\*\*

Pedon ID: S04NY031004

( Essex, New York )

Print Date: Jun 14 2016 2:09PM

Sampled As : Esther

Medial, amorphic Aquandic Haplocryod

USDA-NRCS-NSSC-Soil Survey Laboratory

; Pedon No. 09N0532

CEC & Bases				-1-	-2-	-3-	-4-	-5-	-6-	-7-	-8-	-9-	-10-	-11-	-12-	-13-	-14-								
				(- - - - - NH <sub>4</sub> OAC Extractable Bases - - - - -)								CEC8	CEC7	ECEC	(- - - - Base - - - -)										
								Sum	Acid-	Extr	KCl	Sum	NH <sub>4</sub>	Bases	Al	(- Saturation -)									
Layer	Depth	Horz	Prep	Ca	Mg	Na	K	Bases	ity	Al	Mn	Cats	OAC	+Al	Sat	Sum	NH <sub>4</sub> OAC								
				(- - - - - cmol(+) kg <sup>-1</sup> - - - - -)								(- - - - cmol(+) kg <sup>-1</sup> - - -)				(- - - - - % - - - - -)									
				4B1a1a	4B1a1a	4B1a1a	4B1a1a		4B2b1a1	4B3a1a	4B3a1a		4B1a1a												
09N02311	0-3	Oi	S	17.0	3.5	0.5	3.0	24.0					98.1				24								
09N02312	3-10	Oe	S	12.3	1.6	0.1	1.0	15.0	180.8			195.8	130.5			8	11								
09N02313	10-20	Oa	S	2.4	0.5	0.1	0.4	3.4	190.2			193.6	109.0			2	3								
09N02314	20-25	E	S	0.2	0.1	tr	tr	0.3	22.4	5.4	tr		10.3				3								
09N02315	25-56	Bhs1	S	0.3	tr	tr	tr	0.3	113.3	11.2	tr		40.2				1								
09N02316	56-71	Bhs2	S	0.2	--	tr	--	0.2	66.0	5.3	--		30.6				1								
09N02317	71-84	BC	S	0.1	--	tr	--	0.1	24.1	1.8	--	24.2	11.1	1.9	95	0	1								
09N02318	84-183	Cd	S	tr	--	--	--	tr	15.4	1.0	--		6.1				0								
Salt				-1-	-2-	-3-	-4-	-5-	-6-	-7-	-8-	-9-	-10-	-11-	-12-	-13-	-14-	-15-	-16-	-17-	-18-	-19-	-20-		
				(- - - - - Water Extracted From Saturated Paste - - - - -) 1:2																					
																		Total	Elec	Elec	Exch				
Depth				Ca	Mg	Na	K	CO <sub>3</sub>	HCO <sub>3</sub>	F	Cl	PO <sub>4</sub>	Br	OAC	SO <sub>4</sub>	NO <sub>2</sub>	NO <sub>3</sub>	H <sub>2</sub> O	Salts	Cond	Cond	Na	SAR		



Layer	(cm)	Horz	Prep	(----- mmol(+) L <sup>-1</sup> -----)	(----- mmol(-) L <sup>-1</sup> -----)	(---- % ----)	(- dS m <sup>-1</sup> -)	%
09N02314	20-25	E	S					tr
09N02315	25-56	Bhs1	S					tr
09N02316	56-71	Bhs2	S					tr
09N02317	71-84	BC	S					tr
09N02318	84-183	Cd	S					--

pH & Carbonates				-1-	-2-	-3-	-4-	-5-	-6-	-7-	-8-	-9-	-10-	-11-
				(- ----- pH -----)				(- - Carbonate - -)				(- - Gypsum - - -)		
				CaCl <sub>2</sub>				As CaCO <sub>3</sub>				As CaSO <sub>4</sub> *2H <sub>2</sub> O Resist		
Layer	Depth (cm)	Horz	Prep	KCl	0.01M 1:2 4C1a2a	H <sub>2</sub> O 1:1 4C1a2a	Sat Paste	Oxid	NaF	<2mm (----- % -----)	<20mm 4E1a1a1a1	<2mm 4C1a1a1a1	<20mm 4E1a1a1a1	ohms cm <sup>-1</sup>
09N02314	20-25	E	S		3.7	3.8			9.5	tr				
09N02315	25-56	Bhs1	S		4.1	4.1			11.5	tr				
09N02316	56-71	Bhs2	S		4.4	4.6			11.7	tr				
09N02317	71-84	BC	S		4.6	5.2			11.5					
09N02318	84-183	Cd	S		4.7	5.1			11.3	tr				

### \*\*\* Primary Characterization Data \*\*\*

Pedon ID: S04NY031004  
 Sampled As : Esther  
 USDA-NRCS-NSSC-Soil Survey Laboratory

( Essex, New York )  
 Medial, amorphmic Aquandic Haplocryod  
 ; Pedon No. 09N0532

Print Date: Jun 14 2016 2:09PM

Organic				-1-	-2-	-3-	-4-	-5-	-6-	-7-	-8-	-9-	-10-	-11-	-12-	-13-	-14-	-15-	-16-	-17-
Layer	Depth (cm)	Horz	Prep	Mineral	OM	OM+	(- Total -)			Fiber Content		NaPyro	Decomp	Limnic	(- - pH - -)		(- - Bulk Density - -)		Proj	
				Content	TC*1.724	Min	C	N	C/N	Unrub	Rub	Color	State	Matter	CaCl <sub>2</sub>	H <sub>2</sub> O	33 kPa	33 kPa rewet	OD	Subs
				(- - - - - % - - - - -)			ratio			% (by vol)						g cm <sup>-3</sup>			cm cm <sup>-1</sup>	
				5A			4H2a	4H2a								4C1a2a				

09N02311	0-3	Oi	S		91	99	52.93	2.81	19			--
09N02311	0-3	Oi	MW	8								
09N02312	3-10	Oe	S		88	95	50.99	2.69	19			--
09N02312	3-10	Oe	MW	7								
09N02313	10-20	Oa	S		61	98	35.31	1.84	19			--
09N02313	10-20	Oa	MW	37								
09N02314	20-25	E	S				2.64	0.08	34		3.8	4
09N02315	25-56	Bhs1	S				6.82	0.20	35		4.1	25
09N02316	56-71	Bhs2	S				5.51	0.17	32		4.6	17
09N02317	71-84	BC	S				1.62	0.05	31		5.2	17
09N02318	84-183	Cd	S				1.10	0.01	120		5.1	13

Phosphorous				-1-	-2-	-3-	-4-	-5-	-6-	-7-	-8-	-9-	-10-	-11-	-12-
				(- - - - - Phosphorous - - - - -)											KCl
Depth				Melanic Index	NZ	Acid Oxal	Anion Exch Available	Resin Capacity	Bray 1	Bray 2	Olsen	H <sub>2</sub> O	Citric Acid	Mehlich III	Extr NO <sub>3</sub>
Layer	(cm)	Horz	Prep	%	(- - - - - mg kg <sup>-1</sup> - - - - -)										
				4D8a1	4G2										
09N02314	20-25	E	S	32	156.7										
09N02315	25-56	Bhs1	S	97	315.6										
09N02316	56-71	Bhs2	S	95	281.6										
09N02317	71-84	BC	S	70	242.2										
09N02318	84-183	Cd	S	54	246.7										

## PEDON DESCRIPTION

**sitetext.textsubcat**

**Print Date:** Jun 14 2016

**Description Date:** Sep 10 1993

**Describer:** Gerald Smith, Ted Trevail

**Site ID:** S1993NY031001

**Site Note:**

**Pedon ID:** S1993NY031001

**Pedon Note:** Microrelief: granitic bedrock steps on side of small knob.

**Lab Source ID:** SSL

**Lab Pedon #:** 94P0293

**User Transect ID:**

**Soil Name as Described/Sampled:** Glebe

**Classification:**

**Soil Name as Correlated:** *WALLFACE*

**Classification:**

**Pedon Type:**

**Pedon Purpose:**

**Taxon Kind:**

**Associated Soils:**

**Physiographic Division:**

**Physiographic Province:**

**Physiographic Section:**

**State Physiographic Area:**

**Local Physiographic Area:**

**Geomorphic Setting:** on shoulder of mountainside

**Upslope Shape:**

**Cross Slope Shape:**

**Particle Size Control Section:** 25 to 102 cm.

**Description origin:** Converted from PDP 3.x

**Diagnostic Features:** spodic horizon 3 to 48 cm.

**Country:**

**State:** New York

**County:** Essex

**MLRA:** 143 -- Northeastern Mountains

**Soil Survey Area:** NY031 -- Essex County, New York

**Map Unit:**

**Quad Name:**

**Std Latitude:** 44.3694458

**Std Longitude:** -73.9116669

**Primary Earth Cover:** Tree cover

**Secondary Earth Cover:** Intermixed conifers and hardwoods

**Vegetation:**

**Parent Material:**

**Bedrock Kind:**

**Bedrock Depth:**

**Bedrock Hardness:**

**Bedrock Fracture Interval:**

**Surface Fragments:** 10.0 percent

**Description database:** KSSL

Cont. Site ID: S1993NY031001

Pedon ID: S1993NY031001

Slope (%)	Elevation (meters)	Aspect (deg)	MAAT (C)	MSAT (C)	MWAT (C)	MAP (mm)	Frost-Free Days	Drainage Class	Slope Length (meters)	Upslope Length (meters)
32.0	1,244.0		0.0			1,397		well		

Oi--0 to 5 centimeters (0.0 to 2.0 inches); undecomposed sphagnum moss.

Oa--5 to 8 centimeters (2.0 to 3.1 inches); very dark gray (5YR 3/1) Error; moderate fine granular structure; very friable; many very fine and fine roots and few medium roots; extremely acid, pH 4.0, Hellige-Truog; 30% mineral; abrupt wavy boundary. Lab sample # 94P01837

Bh--8 to 35 centimeters (3.1 to 13.8 inches); dark reddish brown (5YR 3/2) gravelly coarse sandy loam; weak medium and coarse subangular blocky structure; very friable; strongly fluid; many very fine and fine roots and common medium roots and few coarse roots; 5 percent 75 to 250-millimeter unspecified fragments and 10 percent 250 to 600-millimeter unspecified fragments and 15 percent 2 to 75-millimeter unspecified fragments; very strongly acid, pH 4.8, Hellige-Truog; gradual wavy boundary. Lab sample # 94P01838

Bhs--35 to 53 centimeters (13.8 to 20.9 inches); dark brown (7.5YR 3/2) gravelly fine sandy loam; weak medium and coarse subangular blocky structure; friable; strongly fluid; few medium roots and common fine roots; 5 percent 250 to 600-millimeter unspecified fragments and 10 percent 75 to 250-millimeter unspecified fragments and 15 percent 2 to 75-millimeter unspecified fragments; very strongly acid, pH 4.8, Hellige-Truog; gradual wavy boundary. Lab sample # 94P01839

BC--53 to 66 centimeters (20.9 to 26.0 inches); brown (10YR 4/3) stony loamy coarse sand; weak medium subangular blocky structure; friable; weakly smeary; 5 percent 75 to 250-millimeter unspecified fragments and 10 percent 2 to 75-millimeter unspecified fragments and 15 percent 250 to 600-millimeter unspecified fragments; strongly acid, pH 5.3, Hellige-Truog; abrupt wavy boundary. Lab sample # 94P01840

R--66 to 91 centimeters (26.0 to 35.8 inches); Whiteface anorthosite bedrock.

\*\*\* Primary Characterization Data \*\*\*  
( Essex, New York )

Pedon ID: S1993NY031001

Print Date: Jun 14 2016 2:09PM



Sampled as on Sep 8, 1993:  
Revised to correlated on Jan 4, 2008:

Glebe ; Coarse-loamy, mixed Typic Humicryods  
Wallface ; Coarse-loamy, mixed Typic Humicryod

SSL - Project RP94NY114 ESSEX COUNTY  
- Site ID S1993NY031001 Lat: 44° 22' 10.00" north Long: 73° 54' 42.00" west MLRA: 143  
- Pedon No. 94P0293  
- General Methods 1B1A, 2A1, 2B

United States Department of Agriculture  
Natural Resources Conservation Service  
National Soil Survey Center  
Soil Survey Laboratory  
Lincoln, Nebraska 68508-3866

Layer	Horizon	Orig Hzn	Depth (cm)	Field Label 1				Field Label 2				Field Label 3				Field Texture			Lab Texture			
94P01837	Oa	Oa	0-3																LCOS			
94P01838	Bh	Bh	3-30													COSL			COSL			
94P01839	Bhs	Bhs	30-48													FSL			SL			
94P01840	BC	BC	48-61													LCOS			SL			
PSDA & Rock Fragments				-1-	-2-	-3-	-4-	-5-	-6-	-7-	-8-	-9-	-10-	-11-	-12-	-13-	-14-	-15-	-16-	-17-	-18-	
				(- - - - - Total - - - - -)				(- - Clay - - -)		(- - - - - Silt - - - - -)		(- - - - - Sand - - - - -)				( Rock Fragments (mm) )						
Lab				Clay	Silt	Sand	Fine	CO <sub>3</sub>	Fine	Coarse	VF	F	M	C	VC	(- - - - - Weight - - - - -)					>2 mm	
Text-				<	.002	.05	<	<	.002	.02	.05	.10	.25	.5	1	2	5	20	.1-	wt %		
ure				.002	-.05	-.2	.0002	.002	-.02	-.05	-.10	-.25	-.50	-1	-2	-5	-20	-75	75	whole		
Layer	Depth	Horz	Prep	(- - - - - % of <2mm Mineral Soil - - - - -)										(- - - - - % of <75mm - - - - -)							soil	
				3A1a1a	3A1a1a	3A1a1a	3A1a1a	3A1a1a			3A1a1a	3A1a1a	3A1a1a	3A1a1a	3A1a1a	3A1a1a	3B1	3B1	3B1			
94P01837	0-3	Oa	S	lcos	0.5	17.6	81.9	9.3			8.3	8.2	18.8	20.8	18.4	15.7	11	13	--	80	24	
94P01838	3-30	Bh	S	cosl	9.9	28.2	61.9	20.4			7.8	6.9	9.4	12.8	15.3	17.5	10	19	10	73	52	
94P01839	30-48	Bhs	S	sl	6.7	36.6	56.7	22.4			14.2	13.6	8.9	9.6	11.5	13.1	5	17	24	69	57	
94P01840	48-61	BC	S	sl	1.5	29.4	69.1	11.8			17.6	12.9	16.1	15.2	12.7	12.2	10	13	4	68	48	
Bulk Density & Moisture				-1-	-2-	-3-	-4-	-5-	-6-	-7-	-8-	-9-	-10-	-11-	-12-	-13-						
				(Bulk Density)		Cole	(- - - - - Water Content - - - - -)							WRD	Aggst							
				33	Oven	Whole	6	10	33	1500	1500 kPa Ratio		Whole	Stabl	(- - Ratio/Clay - - )							
Depth				kPa	Dry	Soil	kPa	kPa	kPa	kPa	Moist	AD/OD	Soil	2-0.5mm	CEC7	1500 kPa						
Layer	Depth	Horz	Prep	(- - - g cm <sup>-3</sup> - - -)			(- - - - - % of < 2mm - - - - -)							cm <sup>3</sup> cm <sup>-3</sup> %								

\*\*\* Primary Characterization Data \*\*\*  
 Pedon ID: S1993NY031001 (Essex, New York) Print Date: Jun 14 2016 2:09PM  
 Sampled As : Glebe Coarse-loamy, mixed Typic Humicryods  
 USDA-NRCS-NSSC-Soil Survey Laboratory : Pedon No. 94P0293

Water Content				-1-	-2-	-3-	-4-	-5-	-6-	-7-	-8-	-9-	-10-	-11-	-12-	-13-		
				(- - Atterberg - -)		(- ---- Bulk Density ---- -)			(- ----- Water Content ----- -)									
				(- - - Limits - - -)		Field	Recon	Recon	Field	Recon	(- ----- Sieved Samples ----- -)							
				LL	PI		33	Oven		33	6	10	33	100	200	500		
						kPa	Dry		kPa	kPa	kPa	kPa	kPa	kPa	kPa	kPa		
Layer	Depth (cm)	Horz	Prep	pct <0.4mm	(- ----- g cm <sup>-3</sup> ----- -)			(- ----- % of < 2mm ----- -)										
				3C1e1a														
94P01838	3-30	Bh	S														33.1	
94P01839	30-48	Bhs	S														45.3	
94P01840	48-61	BC	S														9.5	

Carbon & Extractions				-1-	-2-	-3-	-4-	-5-	-6-	-7-	-8-	-9-	-10-	-11-	-12-	-13-	-14-	-15-	-16-	-17-	-18-	-19-				
				(- ---- Total ---- -)			Est	OC	C/N	(- - - Dith-Cit Ext - - -)			(- ----- Ammonium Oxalate Extraction ----- -)						(- - - Na Pyro-Phosphate - - -)							
				C	N	S	OC	(WB)	Ratio	Fe	Al	Mn	Al+½Fe	ODOE	Fe	Al	Si	Mn	C	Fe	Al	Mn				
Layer	Depth (cm)	Horz	Prep	(- ----- % of <2 mm ----- -)					(- ----- % of < 2mm ----- -)														mg kg <sup>-1</sup>	(- ----- % of < 2mm ----- -)		
				6A2d	6B4a			6A1c		6C2b	6G7a	6D2a		8J	6C9b	6G12b	6V2b	6D5b		6C8a	6G10					
94P01837	0-3	Oa	S	10.27	0.780			15.99	20																	

94P01838	3-30	Bh	S	0.703	12.81	18	2.3	1.9	--	2.72	0.86	1.57	1.93	0.21	224.0	1.8	2.2
94P01839	30-48	Bhs	S	0.684	12.14	18	2.2	4.7	--	7.20	1.19	1.63	6.39	1.34	tr	1.7	3.4
94P01840	48-61	BC	S	0.121	1.77	15	0.7	0.9	--	1.38	0.17	0.19	1.29	0.35	tr	0.2	0.7

CEC & Bases	-1-	-2-	-3-	-4-	-5-	-6-	-7-	-8-	-9-	-10-	-11-	-12-	-13-	-14-
-------------	-----	-----	-----	-----	-----	-----	-----	-----	-----	------	------	------	------	------

				(- - - - - NH <sub>4</sub> OAC Extractable Bases - - - - -)								CEC8	CEC7	ECEC	(- - - - Base - - - -)		
				Sum				Acid-	Extr	KCl	Sum	NH <sub>4</sub>	Bases	Al	(- Saturation -)		
Layer	Depth	Horz	Prep	Ca	Mg	Na	K	Bases	ity	Al	Mn	Cats	OAC	+Al	Sat	Sum	NH <sub>4</sub> OAC
				(- - - - - cmol(+) kg <sup>-1</sup> - - - - -)								(- - - - cmol(+) kg <sup>-1</sup> - - -)				(- - - - - % - - - - -)	
				6N2e	6O2d	6P2b	6Q2b		6H5a	6G9c	6D3b	5A3a	5A8b	5A3b	5G1	5C3	5C1
94P01838	3-30	Bh	S	0.2	0.1	tr	tr	0.3	65.6	5.2	0.3	65.9	42.3	5.5	95	tr	1
94P01839	30-48	Bhs	S	0.1	0.1	0.1	tr	0.3	85.0	3.1	0.2	85.3	70.7	3.4	91	tr	0
94P01840	48-61	BC	S	0.1	tr	tr	--	0.1	19.5	0.8	--	19.6	10.7	0.9	89	1	1

### \*\*\* Primary Characterization Data \*\*\*

Pedon ID: S1993NY031001

( Essex, New York )

Print Date: Jun 14 2016 2:09PM

Sampled As : Glebe

Coarse-loamy, mixed Typic Humicryods

USDA-NRCS-NSSC-Soil Survey Laboratory

; Pedon No. 94P0293

Salt	-1-	-2-	-3-	-4-	-5-	-6-	-7-	-8-	-9-	-10-	-11-	-12-	-13-	-14-	-15-	-16-	-17-	-18-	-19-	-20-
------	-----	-----	-----	-----	-----	-----	-----	-----	-----	------	------	------	------	------	------	------	------	------	------	------

( - - - - - Water Extracted From Saturated Paste - - - - - ) 1:2

																			Total	Elec	Elec	Exch		
	Depth			Ca	Mg	Na	K	CO <sub>3</sub>	HCO <sub>3</sub>	F	Cl	PO <sub>4</sub>	Br	OAC	SO <sub>4</sub>	NO <sub>2</sub>	NO <sub>3</sub>	H <sub>2</sub> O	Salts	Cond	Cond	Na	SAR	
Layer	(cm)	Horz	Prep	(- - - - - mmol(+) L <sup>-1</sup> - - - - -)				(- - - - - mmol(-) L <sup>-1</sup> - - - - -)											(- - - - % - - - -)		(- - dS m <sup>-1</sup> - -)		%	
94P01838	3-30	Bh	S																				--	
94P01839	30-48	Bhs	S																				tr	
94P01840	48-61	BC	S																				--	

pH & Carbonates	-1-	-2-	-3-	-4-	-5-	-6-	-7-	-8-	-9-	-10-	-11-
-----------------	-----	-----	-----	-----	-----	-----	-----	-----	-----	------	------

( - - - - - pH - - - - - ) ( - - Carbonate - - ) ( - - Gypsum - - )

Layer	Depth (cm)	Horz	Prep	KCl	CaCl <sub>2</sub>		Sat Paste	Oxid	NaF	As CaCO <sub>3</sub>		As CaSO <sub>4</sub> *2H <sub>2</sub> O		Resist		ohms cm <sup>-1</sup>				
					0.01M	H <sub>2</sub> O				<2mm	<20mm	<2mm	<20mm							
					1:2	1:1				(- ----- % -----)										
					4C1a2a	4C1a2a														
94P01838	3-30	Bh	S		4.3	4.3														
94P01839	30-48	Bhs	S		4.7	4.5														
94P01840	48-61	BC	S		4.9	4.9														
Organic				-1-	-2-	-3-	-4-	-5-	-6-	-7-	-8-	-9-	-10-	-11-	-12-	-13-	-14-	-15-	-16-	-17-
	Depth (cm)	Horz	Prep	Mineral	OM	OM+	(- Total -)		Fiber Content		NaPyro	Decomp	Limnic	(- - pH - -)		(- - Bulk Density - -)		Proj		
				Content	TC*1.724	Min	C	N	C/N	Unrub	Rub	Color	State	Matter	CaCl <sub>2</sub>	H <sub>2</sub> O	33 kPa	33 kPa rewet	OD	Subs
Layer				(- ----- % -----)				ratio	% (by vol)									g cm <sup>-3</sup>	cm cm <sup>-1</sup>	
				5A			6A2d	6B4a								4C1a2a				
94P01837	0-3	Oa	S	82			10.27	0.780	20									15		
94P01838	3-30	Bh	S					0.703	18							4.3		22		
94P01839	30-48	Bhs	S					0.684	18							4.5		26		
94P01840	48-61	BC	S					0.121	15							4.9		13		
Phosphorous				-1-	-2-	-3-	-4-	-5-	-6-	-7-	-8-	-9-	-10-	-11-	-12-					
				(- ----- Phosphorous -----)											KCl					
				Melanic	NZ	Acid	Anion Exch	Resin	Bray	Bray	Olsen	H <sub>2</sub> O	Citric	Mehlich	Extr					
	Depth			Index		Oxal	Available	Capacity	1	2			Acid	III	NO <sub>3</sub>					
Layer	(cm)	Horz	Prep	%	(- ----- mg kg <sup>-1</sup> -----)															
				6S4																
94P01838	3-30	Bh	S	97																
94P01839	30-48	Bhs	S	99																
94P01840	48-61	BC	S	71																

\*\*\* Primary Characterization Data \*\*\*



Pedon ID: S1993NY031001  
 Sampled As : Glebe  
 USDA-NRCS-NSSC-Soil Survey Laboratory

( Essex, New York )  
 Coarse-loamy, mixed Typic Humicryods  
 ; Pedon No. 94P0293

Print Date: Jun 14 2016 2:09PM

Sand - Silt Mineralogy (2.0-0.002 mm)				-1-	-2-	-3-	-4-	-5-	-6-	-7-	-8-	-9-	-10-	-11-	-12-	-13-	-14-	-15-	-16-	-17-	-18-					
				X-Ray						Thermal						Optical						EGME		Inter preta tion		
																Grain Count						Retn				
																7B1a2										
Layer	Depth (cm)	Horz	Fract ion	(----- peak size -----)						(----- % -----)						(----- % -----)						mg g <sup>-1</sup>				
94P01839	30.0-48.0	Bhs	csi													36	AR 39	QZ 34	FK 14	PR 4	HN 4	MS 2				
																	GN 1	OP 1	FP 1	TM tr	AM tr	GS tr				
																	BT tr	PO tr								

Crylic Data Sheet - Essex Co. Soil Survey Data + Dr. John Witty Whiteface Mtn PhD thesis Data + 3 Hamilton Co pedons

andic horizons in red

possible andic horizons (not enough labdat) in green

pedons that are andisols, andic subgroup, or andic sub if not lithic in blue

pedons that are possible (not enough lab data) andisols, andic subgroup, or andic sub if not lithic in orange

PEDON/HORIZ-DEPTH	HOR-TH(CM)	Al+1/2Fe-amox	Al+1/2Fe-NaPyDi	Db	P ret	%OM-LOI	% OC	tex+RF%vol	pH H2O	REDOX	Map Unit	COMMENTS
WITTY67NY-031-001											998F (401E)	
Santanoni - best fit												
Oi ----- 0 - 4cm	4				0.29		37	21.5 fib - 14	4.2			does not make
A ----- 4 - 10cm	6		0.43		0.62		18	10.4 lcos - 15	4.2			humicryod - or andic
E ---- dis ~ 33% of pit												
			0.17				3.4	2 grcos - 16	4.5			intergrade
Bhs1---- 10 - 15cm	5		1.05		0.71		12	7 grcosl - 22	4.2			sandy-skeletal, isotic,
Bhs2---- 15 - 25cm	10		1.22		0.83		8.2	4.8 vgrlcos - 36	4.5			Typic Haplocryods
Bhs3---- 25 - 48cm	23		1.48		0.89		8.5	4.9 vgrlcos - 36	4.7			
Bs1---- 48 - 71cm	23		0.93		1.18		3.8	2.2 vgrlcos - 39	4.8			
Bs2---- 71 - 84cm	13		0.41		1.61		1.9	1.1 vgrlcos - 40	4.6			
C----- 84 - 89cm	5		0.41		1.66		1.5	0.9 vgrlcos - 39	4.9			
R----- 89cm												
WITTY67NY-031-002											998F (401E)	
Santanoni - best fit												
Oi----- 0 - 5cm	5				0.32		30	17.4 fib - 23	3.9			does not make
A1---- 5 - 20cm	15				0.64		25	14.5 grlcos - 30	4.2			humicryod - or andic
A2---- 20 - 38cm	18				0.8		14	6.1 vgrlcos - 37	4.4			intergrade [no labdat]
AB---- 38 - 46cm	8				0.94		6.3	3.7 vgrcos - 51	4.5			sandy-skeletal, isotic,
Bhs1-- 46 - 74cm	28				0.79		7.4	4.3 vgrcos - 59	4.6			Typic Humicryods
Bhs2-- 74 - 81cm	7				0.99		8.8	5.1 vgrcos - 40	4.6			
C----- 81- 84cm	3				1.38		3.8	2.2 grfsl - 29	4.7			
R----- 84cm												
WITTY67NY-031-008											971D (413D)	buried horizons due to
Sisk - best fit												
Oi---- 0 - 1cm												windthrow and/or creep
Oe--- 1 - 5cm	4				0.13		86	50 hem - 11	4.2			Sisk w/o Cd - no data to
Oa1-- 5 - 8cm	3				0.19		55	32 sap - 11	3.9			support andic or spodic
E1 --- 8 - 9cm												but Db, OC, and acidity
Bhs1- 9 - 13cm	4						23	13.3 cosl - 13	4.5			fit - coarse-loamy. Isotic,
E2----- 13 - 15cm												Typic Humicryods
Oa2---- 15 - 20cm	5				0.31		37	21.5 sap - 12	4.4			
Bhs2--- 20 - 43cm	13				0.56		20	11.6 grcosl - 17	4.5			
E3----- 43 - 47cm	4				0.8		6.9	4 grlcos - 15	4.6			
Bhs3--- 47 - 51cm	4				0.69		15	8.7 grsl - 27	4.7			
Bhs4---- 51 - 78cm	27				0.7		12	7 grsl - 21	4.7			
Bs1----- 78 - 102cm	24				0.8		8.4	4.9 grcosl - 25	4.7			
Bs2----- 102 - 117cm	15				1.03		6.1	3.5 grlcos - 31	4.7			

C1----- 117 - 127cm	10		1.37	3.8	2.2 vgrcos - 42	4.8	
C2----- 127 - 147cm	20		1.14	1.7	1 vgrcosl - 40	4.8	
WITTY67NY-031-009							971D (413D)
sandy Sisk							
Oi----- 0 - 8cm	8		0.1	90	52.2	3	sandy, isotic, Oxyaquic
Oe----- 8 - 14cm	6		0.15	94	54.5	3.1	Humicryods - does not
Oa----- 14 - 19cm	5		0.16	88	51	3.3	make andic intergrade
E----- 19 - 24cm	5	0.15	0.81	7.3	4.2 ls - 8	3.5	although AL & Fe levels
Bhs1--- 24 - 29cm	5	1.23	0.68	14	8.1 sl/ls - 6	3.6	getting close
Bhs2--- 29 - 47cm	18	1.54	0.58	20	11.6 lcos - 6	3.9	
Bhs3--- 47 - 65cm	18	1.75	0.89	11	5.4 lcos - 13	4.1	
BC----- 65 - 83cm	18	0.62	1.27	4.2	2.4 grlcos - 17	4.2	
Cd1----- 83 - 93cm	10	0.42	1.79	2.1	1.2 grlcos - 18	4.3	
Cd2----- 93 - 118cm	25	0.35	1.69	1.2	0.7 grs - 27	4.5	
Cd3----- 118 - 138cm	20	0.21	1.76	0.96	0.6 grlcos - 23	4.6	
WITTY67NY-031-010							991D (409D)
Saddleback best fit							
Oi----- 0 - 3cm	3		0.15	91	52.8	4	loamy, isotic,
Oe----- 3 - 8cm	5		0.23	77	44.7	3.8	Lithic Humicryods
Oa----- 8 - 23cm	15		0.39	46	26.7	4	too sandy in upper B for
E----- 23 - 25cm	2		0.98	3.1	1.8 ls - 7	4.3	Saddleback
Bhs1--- 25 - 28cm	3		0.78	12	7 ls - 7	4.2	not enough lab data to
Bhs2--- 28 - 33cm	5		0.78	15	8.7 ls - 7	4.2	support andic intergrade
Bhs3--- 33 - 43cm	10		1.04	15	8.7 sl - 7	4.4	or spodic [assumed]
Bhs4--- 43 - 53cm	10			10	5.8 sl - 8	4.5	
C----- 53 - 56cm	3			3	1.7 sl - 12	4.8	
R----- 56cm							
WITTY67NY-031-011							995F (405E)
andic Saddleback inter							
Oi1----- 0 - 5cm			0.18	90	52.2	4	loamy [medial], isotic,
Oi2----- 5 - 15cm				88	51	3.8	Lithic Humicryod--- has
Oe----- 15 - 36cm			0.13	96	55.7	3.9	Al + 1/2Fe and Db to
Oa----- 36 - 38cm			0.14	78	45.2	4	make andic intergrade
E----- 38 - 41cm		0.08	0.5	8.6	5 cosl - 9	4	(w/o P ret)
Bhs1--- 41 - 43cm		1.24	0.5	15	8.7 sl - 11	4.2	
Bhs2--- 43 - 61cm		3.1	0.48	34	19.7 grcosl - 15	4.4	
Bhs3--- 61 - 71cm		2.9	0.7	23	13.3 sl - 11	4.5	
BC----- 71 - 79cm		1.85	1.13	10	5.8 grcosl - 29	5	
C----- 79 - 84cm		1.5		6.2	3.6 grls - 24	5.1	
R----- 84cm							
WITTY67NY-031-012							995F (405E)
Glebe best fit							
Oi----- 0 - 1cm	1		0.12	89	51.6	3.2	coarse-lomy, isotic,

[illegible]



WITTY67NY-031-016							991D (409D)	poorly drained site in saddle between Lookout and Whiteface - sandy epiaquept - cryic Tahawus w/ a Cd
cryic TAHAWUS best								
Oi-----0 to 5cm	5		0.11	91	53	3.1		
Oe-----5 to 11cm	6		0.12	89	52	4.2		
Oa1---11 to 23cm	12		0.16	89	52	4.7		
Oa2---23 to 33cm	10		0.23	73	42	4.8		
A-----33 to 38cm	5	0.79		23	13 l - 13	4.9		
Bg----38 to 56cm	18	0.51	1.71	2.3	1 grlcos - 20	5.1 dep&con		
BCg---56 to 69cm	13	0.29	1.76	1.1	0.64 grlcos - 24	5.5 conc		
Cg1----69 to 86cm	17	0.12	2.12	0.47	0.27 vgrls - 35	5.2		
Cg2----86 to 102cm	16	0.11		0.54	0.31 vgrlcos - 44	5.2		
WITTY67NY-031-017							998F (401E)	Ricker w/ fragmental substratum
Ricker best fit								
Oi-----0 to 10cm	10		0.22	77	45	4.1		
Oe-----10 to 17cm	7		0.26	53	31	4		
Oa-----17 to 37	20		0.41	28	16	4		
R(Bhs)-37 to 42 or 88cm 5 to 51				11	6 lcos-28 to F	4.6		
WITTY67NY-031-018							995F (405E)	OK for Ricker
Ricker								
Oi-----0 to 5cm	5		0.1	92	53	4		
Oe-----5 to 13cm	8		0.15	93	54	3.7		
Oa1--13 to 28cm	15		0.38	53	31	4		
Oa2--28 to 38cm	10		0.47	61	35	4.1		
R-----38cm								
WITTY67NY-031-19							995F (405E)	11cm short of making andic intergrade or andisol if O horizons have enough andic properties
Glebe w/ some andic								
Oi-----0 to 4cm	4		0.13	91	53	3.6		
Oe-----4 to 6cm	2		0.19	73	42	3.8		
Oa1----6 to 20cm	14		0.3	56	33	4.3		
Oa2----20 to 32cm	12		0.25	38	22	4.5		
Bhs1---32 to 36cm	4	1.05	0.67	12	7 grlcos - 17	4.7		
Oab3---36 to 51cm	15		0.35	34	20 sap - 11	4.7		
Bhs2----51 to 66cm	14	2.69	0.54	21	12 cosl - 13	4.7		
Bhs3----66 to 84cm	18	0.38	1.08	13	6 grcosl - 21	5.1		
Bs-----84 to 102cm	18	1.37	1.27	6.1	4 vgrcosl - 48	5.6		
C-----102 to 124cm	22	0.67	1.54	3.4	2 vgrlcos - 52	5.9		
WITTY67NY-031-20							995F (405E)	loamy Couchsachraga - Saddleback not humodic
Couchsachraga best fit								
Oi-----0 to 5cm	5		0.11	89	52	3.9		
Oe-----5 to 10cm	5		0.16	87	51	4		
Oa1-----10 to 20cm	10		0.32	36	21	4.3		
Bhs1----20 to 30cm	10		0.55	25	15 cosl	4.6		

Oab3----30 to 42cm	12		0.3	43	25	4.6
Bhs2----42 to 51cm	9		0.62	18	10 grlcos - 15	4.7
Bhs3----51 to 56cm	5		0.88	14	8 cosl - 12	4.9
BC-----56 to 58cm	2		1.04	9.7	6 fsl - 3	4.9
R-----58cm						

#### WITTY67NY-031-21

Ricker						
Oi-----0 to 8cm	8		0.09	87	51	4.2
Oe1----8 to 13cm	5		0.18	83	48	4.3
Oe2----13 to 25cm	12		0.16	93	54	4.3
Oa1----25 to 36cm	11		0.35	57	33	4.3
Oa2----36 to 43cm	7		0.73	37	22	4.7
Bhs----43 to 48cm	5		0.82	15	9 grcos - 20	4.7
R-----48cm						

998F (401E) OK for Ricker

#### WITTY67NY-031-22

Ricker (mod deep)						
Oi-----0 to 3cm	3		0.07	83	48	4.1
Oe1----3 to 17cm	14		0.15	79	46	4.3
Oe2----17 to 19cm	2		0.07	92	53	4.5
Oa1----19 to 20cm	1		0.26	83	48	4.6
Oa2----20 to 28cm	8		0.43	48	28	4.5
Oa3----28 to 43cm	15		0.44	58	34	4.7
Oa4----43 to 58cm	15		0.48	57	33	4.8
Bhs-----58 to 66cm	8	0.75	0.7	20	12 lcos - 7	5
R-----66cm						

998F (401E) mod deep Ricker

#### WITTY67NY-031-23

andicRicker/Saddleback						
Oi-----0 to 5cm	5		0.11	91	53	3.9
Oe1----5 to 9cm	4		0.14	88	51	3.8
Oe2----9 to 17cm	8		0.15	95	55	3.7
Oa1----17 to 20	3		0.18	86	50	3.7
E-----20 to 23cm	3	0.14	0.75	6.1	4 fsl - 14	4.1
Oa2(Bhs1)--23 to 24cm	1	1.4	0.31	46	27 sap/l - 14	3.9
Oa3(Bhs2)--24 to 34cm	10	2.63	0.3	56	33 sap/c - 13	4.2
Oa4(Bhs3)--34 to 44cm	10	3.05	0.29	48	28 sap/l - 14	4.3
Oa5(Bhs4)--44 to 53cm	9	3.99	0.69	42	24 sap/l - 15	4.4
Bhs(5)----53 to 54cm	1	2.05		11	6 vgrl - 42	4.6
R-----54cm						

998F (401E) originally described as a mineral soil but OC too high in Bhs horizons so it ends up an [Andic] Typic Cryofolist --- if OC not so high, then a loamy, [Andic] Lithic Humicryod

#### WITTY67NY-031-24

Santanoni MWD						
Oi-----0 to 3cm	3		0.12	93	54	4
Oe-----3 to 15cm	12		0.12	88	51	3.6
E-----15 to 33cm	18		0.71	7.8	5 grcosl - 29	3.8

991D (409D) no lab data to support andic intergrade except Db - makes Aquic Humicryods

Bhs1---33 to 48cm	15		0.75	24	14	vgrlcos-68	4.2	
Bhs2---48 to 66cm	18		0.79	25	15	vgrcosl-56	4.2	
Bhs3---66 to 71cm	5		0.96	14	8	vgrcosl-57	4.5	
BC-----71 to 81cm	10		1.43	2.2	1	vgrlcos-52	4.7	conc
C-----81 to 86cm	5			1.8	1	vgrlcos-41	4.7	conc
R-----86cm								
WITTY67NY-031-25							991D (409D)	VPD cryic Hemist
cryic Burnt Vly								located in saddle
Oi1-----0 to 10cm	10		0.08	95	55	fibric	4	between Whiteface &
Oi2-----10 to 20cm	10		0.11	92	53	fibric	4	Lookout Mtns
Oe1-----20 to 25cm	15		0.14	93	54	hemic	4.2	
Oe2-----25 to 33cm	8		0.18	93	54	hemic	4.3	
Oa1-----33 to 46cm	13		0.19	89	52	sapric	4.2	
Oe3-----46 to 69cm	23		0.15	96	56	hemic	4.1	
Oa2-----69 to 74cm	5		0.2	90	52	sapric	4.4	
Oe4-----74 to 99cm	25		0.19	94	55	hemic	4.4	
Oe5-----99 to 117cm	18		0.21	79	46	hemic	4.6	
C-----117 + cm		?						
WITTY67NY-031-26							991D (409D)	
cryic Burnt Vly								
Oi-----0 to 8cm	8		0.09	94	55		4.1	VPD cryic Hemist
Oe1-----8 to 20cm	12		0.16	92	53		4.1	located in saddle
Oe2-----20 to 36cm	16		0.17	90	52		4.5	between Lookout &
Oe3-----36 to 51cm	15		0.17	91	53		4.6	Esther mtns
Oe4-----51 to 64cm	13		0.14	88	51		4.7	
Oa-----64 to 71cm	7		0.22	71	41		4.8	
C-----71 to 84cm	13			4.3	3	vgrcosl - 36	5.5	
S93-NY-031-001			estimated*				991D (409D)	classifies as: Medial,
Cryand Glebe analog								mixed Typic Fulvicryands
Oi-----0 to 5cm	5							no E horizon or classify
Oa(Bh1)--5 to 8cm	3		0.61		16	lcos		as Andic Humicryod
Bh(2)-----8 to 35cm	28	2.72	0.69	97	12.8	grcosl - 30	4.3	
Bhs-----35 to 53cm	17	7.21	0.72	99	12.1	grsl - 30	4.5	
BC-----53 to 66cm	11	1.39	1.35	71	1.77	grsl - 30	4.9	
R-----66cm								
S93-NY-031-002			estimated*				993F (409E)	sandy-skeletal, isotic
Santanoni IRD								Typic Humicryod
Oi-----0 to 5cm	5							does not make andic
Oe-----5 to 8cm	5							subgroup by 7cm
E-----8 to 10cm	3							
Bh-----10 to 23cm	13	0.97	0.81	81	9.8	vgrlcos - 35	3.7	
Bhs-----23 to 41cm	18	2.53	0.92	99	7.2	vgrlcos - 35	4.4	
Bs-----41 to 84cm	43	1.93	1.2	96	3.2	vgrlcos - 70	4.7	

BC-----84 to 104cm	20	1.22	1.39	69	1.5 vgrcos - 55	5	
R-----104cm							
S93-NY-031-003			estimated*				2100' elev. - coarse-loamy
humod Mundalite							isotic, frigid, Typic
Oe-----0 to 5cm	5					5.1	Haplohumods - 6cm shy
Oa-----5 to 10cm	5					3.9	of making Andic subgroup
E-----10 to 11cm	1						
Bh-----11 to 15cm	4	4.9	0.62	96	15.7 ls - 10	4.2	
Bhs-----15 to 30cm	15	4.45	0.84	99	8.88 ls - 10	4.6	
Bs-----30 to 61cm	31	2.69	1.03	99	5.49 grls - 20	5.1	
BC-----61 to 86cm	25	0.81		41	0.39 grls - 25	5.4	conc
Cd-----86 to 155cm	69	0.61		30	0.25 grsl - 25	5.4	
S93-NY-031-004			estimated*				995F (405E)
Skylight IRD							sandy, isotic, Lithic
Oe-----0 to 5cm	5						Humicryod
Oa-----5 to 13cm	8				48.2	3.8	does not make andic sub
E-----13 to 23cm	10	0.78	0.84	64	9.01 ls - 2	4.2	
Bh-----23 to 38cm	15	1.07	0.81	75	9.7 ls - 2	4.4	
R-----38cm							
S93-NY-031-005			estimated*				995F (405E)
Couchsachraga tax?							right on the sl/ls line -
Oi-----0 to 5cm	5						loamy/sandy, isotic
Oe-----5 to 35cm	30				58.5	3.1	Lithic Humicryods
Oa-----35 to 48cm	13				54.9	3.3	Bh is Andic, would be
E-----48 to 51cm	3						[andic] lithic by 60%
Bh-----51 to 63cm	12	2.46	0.56	91	18.2 sl/ls - 5	3.8	thickness rule, but not
R-----63cm							25cm rule - lithic keys 1st
S93-NY-031-006			estimated*				991D (409D)
andic subgroup Glebe							classifies as medial,
Oe-----0 to 10cm	10						amorphic Andic
Oa-----10 to 23cm	13				41.4		Humicryods - makes
E-----23 to 25cm	2	0.29	0.47		21.8 ls - 2		andic subgroup easy
Bh1-----25 to 46cm	21	3.17	0.56	93	19.3 l - 8	4	
Bh2-----46 to 64cm	18	6.38	0.6	99	16.3 sl - 12	4.6	
Bhs-----64 to 89cm	25	3.23	0.88	99	8.16 sl - 12	4.9	
BC-----89 to 97cm	8	3.94	0.92	99	7.25 fsl - 12	4.8	
R-----97cm							
S93-NY-031-007			estimated*				993F (409E)
andic subgroup Glebe?							will make andic subgroup
Oe-----0 to 5cm	5				51.5	4.4	of Humicryods if Fe & Al
Oa-----5 to 10cm	5				39.3	3.7	data come back ok
E-----10 to 15cm	5		0.94	40	7.06 fsl - 2	3.5	

Bh(Oa2)-15 to 33cm	18		0.5	89	23.4 sl - 2	3.7		
Bhs-----33 to 53cm	20		0.53	99	20.9 cosl - 7	4.3		
Bs-----53 to 64cm	11		0.97	99	6.56 ls - 7	4.7		
R-----64cm								
S93-NY-031-008							995F (405E)	ok for Ricker
Ricker								
Oi-----0 to 3cm	3							
Oe-----3 to 13cm	10				57.4	3.2		
Oa-----13 to 25cm	12				49.1	3.4		
R-----25cm								
S93-NY-031-009			estimated*				998F (401E)	on the line between a
Couchsachraga IRD								Humicryod & Folist
Oe-----0 to 5cm	5				17.3	3.8		makes spodic by NaPyro
Oa(1)-----5 to 10cm	5				17.3	3.8		but not by AmOx - let it
Bh(Oa2)--10 to 23cm	13	0.45	0.53	51	20.6 cos - 3	3.7		go as spodic - no andic
R-----23cm								
S93-NY-031-010			estimated*				998F (401E)	ok for Lithic Cryofolist
Ricker w/ mineral								
Oe-----0 to 8cm	8				60.4	4.4		
Oa-----8 to 20cm	12				27.4	4.1		
Bh-----20 to 28cm	8	0.31	0.76	40	10.9 cos - 3	3.7		
R-----28cm								
S93-NY-031-011			estimated*				971D (413D)	Aquic Humicryods but
sandy Sisk - no Cd								right on the edge for
Oe-----0 - 18cm	18				58.2	3.4		making Aquandic
Oa-----18 - 28cm	10				33.2	3.3		Humicryods
E-----28 - 30	2							p/s is sandy
Bh(Oa2)----30 - 46cm	16	1.9	0.51	89	21.2 fsl - 1	3.5		
Bhs-----46 - 58cm	12	5.86	0.59	99	16.9 ls - 1	4.4		
BC-----58 - 76cm	18	2.78	1.06	98	5.08 ls - 1	4.6 conc		
C-----76 - 112cm	36	2.29	1.12	95	4.15 cos - 5	4.9 conc		
S93-NY-031-012			estimated*				995F (405E)	just makes medial, mixed
v.shallow loamy Andisol								Lithic Haplocryands by
Oi-----0 to 3cm	3							60% thickness rule - no E
Oa-----3 - 36cm	33				31.81	4.6		or would be loamy, isotic
Bh1-----36 to 44cm	8	2.54	0.54	96	19.35 sl - 1	4.6		Lithic Humicryods
Bh2-----44 to 49cm	5	1.13	0.76	94	11.58 fsl -1	4.5		
R-----49cm								
S94-NY-031-001			Bhs only				941D (381D)	coarse-loamy, mixed,
andic subgr Hogback			estimated#					superactive, frigid, Lithic
Oi-----0 to 5cm	5				56.2	5.1		Haplohumods



Oe-----5 to 8cm	3				56.7	4.1		Lithic keys out first or would be Andic subgroup
Oa-----8 to 17cm	9				48	4		
E-----17 - 19cm	2							
Bh-----19 - 44cm	25	2.5	0.4	95	18.4 l - 2	3.9		
Bhs-----44 - 63cm	19	1.23	0.9 [1.32]	69	3.14 lcos - 10	4.4		E horizon 33% lateral => Andisol?
R-----63cm								
S94-NY-031-002			Bh, Bhs estimated#				991D (409D)	keys as coarse-loamy, isotic Oxyaquic Humicryods 1cm thin of Andic sub
Glebe andic subgr								
Oi-----0 to 3cm	3	0.12			54.6	4.3		
Oe-----3 to 7cm	4	0.09	0.17		57.7	3.9		
Oa-----7 to 39cm	32	0.15	0.17		56.3	3.2		
E-----39 - 42cm	3	0.22	0.8	17	5.07 sl - 2	3.7		
Bh-----42 - 48cm	6	3.83	0.4 [.56]	91	18.3 fsl - 2	3.8		
Bhs-----48 - 66cm	18	3.97	0.5 [.6]	92	16.3 fsl - 2	4		
Cd-----66 - 96cm	30	1.84	1.06	95	2.82 ls - 10	4.9 conc.		
R-----96cm								
S94-NY-031-003							993F (409E)	keys as medial, mixed Pachic Fulvicryands
Andisol Santanoni								
Oi-----0 to 27cm	27	0.97			56.3	3.7		
Oe-----27 to 37cm	10	0.69			58.4	3.6		
Oa-----37 to 48cm	11	2.32	0.32		30.4	3.9		
Bh-----58 - 63cm	5	3.19	0.34	81	18.6	3.8		
Bhs-----63 - 89cm	26	3.61	0.58	96	8.3	4.8		
Bh'-----89 - 99cm	10	4.21	0.68	99	9.36	4.7		no E horizon present
R-----99cm								
S94-NY-031-004			Bh, Bhs estimated#				998F (401E)	keys as medial, mixed Lithic Haplocryands
Andisol Couchsachraga								
Oi-----0 to 8cm	8				57.8	4.2		
Oe-----8 to 13cm	5				16	3.9		
Oa(1)-----13 to 31cm	28				42.1	3.7		
Bh(Oa2)--31 - 41cm	10	2.8	0.4	95	24.4	3.7		
Bhs-----41 - 56cm	15	4.77	0.6 [.78]	95	10.4	4.6		no E horizon present
R-----56cm								
S94-NY-031-005			Bh, Bhs estimated#				971D (413D)	keys as medial, amorphous Typic Fulvicryand no E horizon in 50% of pedon or would be Aquandic or Andic Humicryods
Andisol Sisk								
Oi-----0 to 5cm	5				57	4.2		
Oe-----5 to 9cm	4				56.7	3.9		
Oa-----9 to 23cm	14		0.34		36.8	3.5		
Bh-----23 - 33cm	10	4.53	0.4 [0.53]	94	19.7 sl - 5	3.7		
Bhs-----33 - 68cm	35	5.64	0.6 [0.79]	99	10.1 sl - 5	4.6		
BCd-----68 - 80cm	12	2.99	1.07	89	2.52 fsl - 12	5 conc		
Cd-----80 - 200cm	20	1.06	1.56	52	0.81 lcos - 12	5.2 depl/conc		E horizon 25% lateral

S87-NY-031-005			BE, Bh2				MwD (225D)	keys as coarse-loamy, isotic, frigid Andic Epiaquods
Andic sub Ampersand			estimated*					
Oa-----0 to 15cm	15			78	55.21	3.7		
BE-----15 - 20cm	5	0.86	1.15	75	3.89 sl - 5	4.2 conc		
Bh1-----20 - 33cm	13	3.31	0.7	97	8.81 sl - 5	4.4 conc		
Bh2-----33 - 46cm	13	3.25	0.9	94	8.6 sl - 5	4.6 conc		
Bhs-----46 - 70cm	24	0.62	0.95	99	8.11 lcos - 25	4.7 conc		
Cd-----70 - 90cm N/D								
S89-NY-041-001			estimated*					keys as a loamy, isotic Lithic Haplocryods doesn't make Humicryods and no andic properties
Saddleback tax								
E-----0 - 8cm	8	0.59	1.16	37	3.78 sl - 10	4.1		
Bhs----8 - 33cm	25	1.42	1.13	71	4.12 sl - 10	4.6		
C-----33 - 36cm	3	0.71	1.49	42	0.8 sl - 10	4.9		
R-----36								
S89-NY-041-002			estimated*					keys as loamy, isotic Lithic Humicryods very close to andic Bhs - 2 %pts off in P Ret
Saddleback - ok								
AE-----0 -18cm	18	0.64	0.75		11.32 sl - 10	3.5		
Bhs---18 - 33cm	15	5.46	0.71	88	12.27 fsl - 10	4.1		
R-----33								
S89-NY-041-003			estimated*					keys as coarse-loamy, isotic Typic Haplocryods does not even make Humicryods - P Ret odd in Bhs
Glebe tax								
O/A-----0 to 15cm	15	0.88			13.17 l - 10	3.7		
E-----15 - 25cm	10	0.6	1.28	42	2.45 sl - 10	4.2		
Bhs-----25 - 38cm	13	2.44	1.13 8 [?]		4.15 sl - 10	4.5		
Bs-----38 - 64cm	26	1.11	1.32	49	2.07 sl - 10	4.6		
BC-----64 - 74cm	10	1.03	1.47	50	0.89 sl - 10	4.9		
Cd-----74 - 99cm	25				0.5 sl - 10	4.9		
R-----99cm								